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Original Articles

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CLINICAL REPORTS OF CASES PRESENTING FEATURES OF UNUSUAL SURGICAL INTEREST.*

By RUDOLPH MATAS, M. D., New Orleans.

1. Cardiospasm causing an enormous dilatation of the esophagus and a curious symptom complex, completely relieved by hydrostatic (retrograde) dilatation with an improvised Plummer's apparatus.

The patient, Miss B. S., of Columbia, Miss., a bright young lady of seventeen years, was referred to me for treatment through the kindness of Drs. J. D. Weis, of New Orleans, and L. D. Dickerson, of McComb City, on October 15, 1914. She had been ill for over two years and had been treated for various conditions until Dr. Weis recognized, by a fluoroscopic examination at the laboratory of the Touro Infirmary, in charge of Dr. Samuel, that she was suffering from a dilatation of the esophagus caused by an obstruction at the cardiac orifice of the

*Extracts from a "Stereopticon Clinic," illustrated by lantern slides and presented by invitation at the 48th Annual Meeting of the Mississippi Medical Association, Hattiesburg, Miss., May 11-13, 1915.

stomach, which he attributed to cardiospasm. When this conclusion was arrived at, the patient had reached a period of extreme acuteness in the clinical history of the disease. The previous history of the patient at first offered no very suggestive facts. She is the daughter of healthy, robust parents, without any notable hereditary antecedents. As a child she had always been healthy, strong and vivacious. She had gone through an unusually severe attack of whooping cough and measles. The only significant fact that could be elicited from medical history was that in early childhood, when two years old, she had accidentally swallowed a very small quantity of condensed lye, but this familiar accident of childhood had not been followed apparently by any serious consequences, as the error was discovered almost immediately; and the child swallowed so little of the lye that no importance was attached to the accident, and it would have been forgotten if the present symptoms, occurring over fifteen years after, had not again recalled it to memory when the real nature of her trouble was recognized in October, 1914. During this long interval of time, the child was seemingly well until about two and a half years before she came under my observation. In the light of the radiologic findings, her history was most typical. Her symptoms had developed along the three distinct lines of the pathognomonic triad that is peculiar to this condition: (1) The stage of discomfort, retrosternal oppression, retroxiphoid cramping and occasional pain, gradually followed by (2) regurgitation of food with sensations of choking and (3) the signs of retention with a great aggravation of the choking signs. The choking spells, which occurred at different times in the course of the two years that preceded the X-Ray diagnosis, constituted the dominant feature of the clinical picture and were so salient that they were attributed to some obscure spasmodic bronchial or pulmonary disease for which the patient was sent to different climates. Gradually these attacks became more frequent. Then it was noticed that they came on at night, especially after taking cold foods and beverages.

During the three months that preceded her admission to the Infirmary, the choking spells were provoked by eating anything: but there was no regurgitation or vomiting except when the patient would lie down, especially at night. For several weeks the paroxysms had become a constant nightly occurrence. Miss

Obs. I. MISS S. (CARDIOSPASM)

No. 1. Radiograph shows the dilated esophageal pouch and contracted stomach partially filled with the contrast (Barium) meal, before treatment was begun.

No. 2. Radiograph taken four months after treatment by retrograde dilatation had overcome the cardiospasm. The esophageal pouch has disappeared, the contrast meal finds its way immediately into the stomach which is now enlarged to normal size; the rounded domelike expansion shown in the picture is caused by the air bubble which has been forced into the fundus by the rapid entrance of the Barium meal.

S. would go to bed apparently comfortable; she would go to sleep promptly and profoundly, but in fifteen or twenty minutes after entering into a deep slumber, and while still asleep, she began to make a peculiar gurgling noise which gradually grew in intensity and loudness until it was interrupted by violent paroxysms of spasmodic cough which initiated the "choking spells." During these spells she made the peculiar gurgling noise previously referred to and which was described as possessing an uncanny character that resembled a death rattle and could be heard distinctly fifty feet away from the patient's bedroom. After continuing for a variable time, the gurgling ended in the regurgitation and violent ejection of food, in large quantities from the mouth and nostrils. It was not until this regurgitation had been completed that the choking spells ceased and the patient could again sleep in peace.

Repeated examinations of the chest and abdomen by ordinary methods were always negative. In the meantime the patient was losing flesh rapidly and by the time the fluoroscopic examination was made in October she had grown very weak and had lost thirty pounds. She weighed normally 135 pounds and now weighed 105.

The fluoroscopic examination made after a contrast (barium) meal at once revealed the true cause of the trouble and explained all these strange phenomena. The radiograph which I am now exhibiting (plate I, fig. 1) shows the esophagus enormously dilated, forming an immense pouch which, beginning about the level of the cricoid cartilage, ends in a flask-like expansion resting with the level of the diaphragm. The pouch is not distended to its full capacity but is sufficiently full in the radiograph to give an idea of its large size. The radiograph also shows the pointed distal end which overlaps the narrow cardiac orifice of the stomach. The plate also shows that the contrast(barium) meal has penetrated into the stomach but that the bulk of the meal is still lodged in the esophageal pouch where it outlines a space larger than the normal stomach. The stomach itself is contracted and small, and in this way the appearances are those of a bilocular stomach, one, an intrathoracic pouch large and elongated, resting above the diaphragmatic level, and the other much smaller, lying in the abdomen, under it.

The radiograph shows that the esophageal pouch held practically all the food the patient took during the day, amounting to two or three meals and more, though these were not very full meals, as the patient was rapidly losing her appetite in the last three weeks as the choking spells interfered with her rest and caused increasing distress. Comparatively little of this food trickled down into the stomach through the tightly constricted cardiac orifice. The girl was really starving while apparently eating sufficiently to nourish a normal individual. At night, during sleep and while lying in a horizontal position the pouch would empty itself by regurgitation and reversed peristalsis in a rhythmic fashion. The soft, macerated and semi-liquid food would empty itself in gushes, which finding the laryngeal reflexes unprepared, partially entered the glottis causing the peculiar gurgling noises which culminated in the spasmodic, stridulous cough and choking sensations which were only relieved by the final ejection of the food from the pouch. In consequence of these nocturnal disturbances the patient had been compelled to abandon her school as it was impossible for any of her schoolmates to room with her. In fact in the last three months the mother had been compelled to sit up at night in anticipation of this nocturnal performance, which was as unfailing as it was distressing and alarming.

TREATMENT

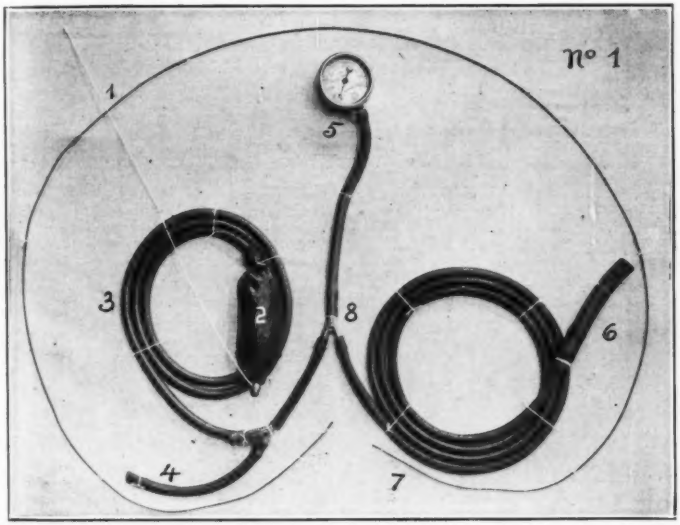
The treatment was begun shortly after the patient was referred to me on October 15, 1914. At first all attempts to pass a gastric tube and olive-pointed bougies failed. The probes only confirmed the fact that the obstruction was at the cardiac orifice of the stomach. The stomach tube simply coiled itself in the pouch but did not find its way to the cardiac orifice. Following Mixter's suggestion, the patient was given a stout silk thread to swallow and this readily passed into the stomach and duodenum so that on the second day the thread held taut when pulled, and allowed two of Plummer's perforated olive-pointed bougies to be threaded upon it, and in this way readily passed into the stomach. The fluoroscope clearly demonstrated that the metallic olives had passed well into the stomach, guided on the thread which acted as a pilot. After this the dilatation of the cardia became an easy matter. On October 19 a stiff horse catheter

was threaded on the pilot thread and passed into the stomach without difficulty; the stomach was then washed out and a pint of milk and three eggs were left in the gastric cavity after this had been washed out. After this, the esophageal pouch was washed out daily with the gastric tube before the patient retired at night and in the morning on rising by the patient herself, who gave the most intelligent co-operation in her treatment. The pouch in this way was kept empty and clean. From this on, the gurgling noises and choking spells ceased completely and the patient enjoyed undisturbed sleep. On October 20 the stomach tube was passed into the stomach without the thread guide; the stomach was washed and a No. 36 Porges esophageal bougie was introduced over the pilot thread. This was followed by the passage of the stomach tube without a guide, and a meal of milk, eggs and beef juice was left in the stomach. From October 20 to 22 the patient fed herself three times a day by the gastric tube with a variety of liquid and soft foodstuffs. This feeding with the tube was kept up systematically by the patient with the view of preventing accumulation in the pouch and favoring its contraction. On October 22 an improvised Plummer's hydrostatic dilator, to which a Jeckh water gauge (manometer) was attached, was now introduced into the stomach—guided by the pilot thread. This thread the patient had kept in place after the first introduction, and it had gone through the gastro-intestinal tract and was discharged with the movements of the bowels, the excess of thread being cut off as it hung from the rectum. It caused little inconvenience and was fed continuously from a spool as the peristaltic movements of the bowels moved it along the intestinal canal. Plummer recommends that the patient swallow six yards of silk thread; this passes through the coils of small intestines, becoming engaged in them so that the string cannot be pulled out on being drawn taut. I found that in this case it was just as well to let the thread go through the intestinal canal and remain in situ, in order to avoid the necessity of repeated swallowing of the thread until the dilatation of the cardia had been successfully accomplished.

The hydrostatic dilator originally suggested by Russell and simplified by Plummer is so readily constructed that any surgeon with a little patience and ingenuity can easily improvise it.

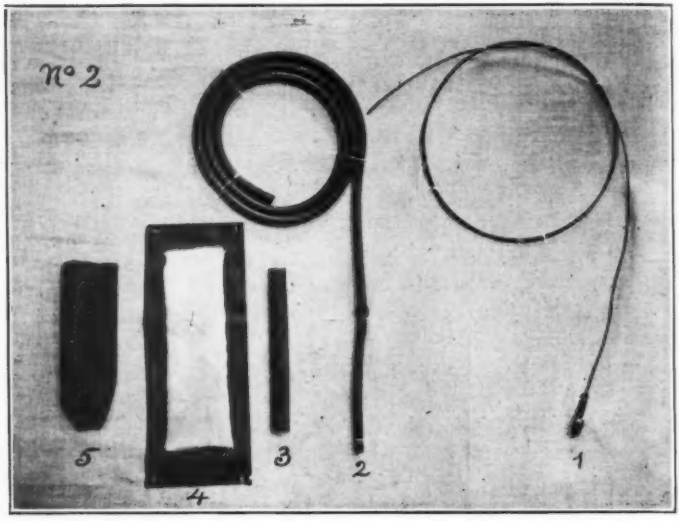
Furthermore, it is so effective and safe, and meets the indications so satisfactorily, that it appears to me that, in principle at least, it is destined to supercede all the other methods of treatment in which dilatation is applicable. The profession is deeply indebted to Plummer for demonstrating and popularizing Russell's splendid idea, which would have probably remained in obscurity had it not been taken up by Plummer who made its merits known to the large audiences that for so many years have witnessed his admirable performances at the Mayo clinics. It will be seen by those who are familiar with Plummer's work, that the simple apparatus, which is illustrated in plates II and III, and which was made for me by my assistant, Dr. L. H. Landry, for the special treatment of this case, differs in some details from the original Plummer device, though it is essentially the same in principle. It is in the method of applying hydrostatic dilatation that I have deviated from Plummer's directions. He recommends that the position of the cardia should be previously accurately determined. The olive is threaded on the string sufficiently for the cardia to engage the balloon in its middle third. "The instrument (gastric tube) carrying the balloon and stiffened by a stilet, is held firmly by the right hand, the index finger resting against the teeth to prevent the dilator being drawn into the stomach. The tap is now opened enough to fill the balloon, but not to indicate any pressure. The pressure is now slowly raised by releasing the drainage tube with the fingers of the left hand or the hand of an assistant. This is to be continued until the gauge registers 575 mm., or about what has been found to be sufficient in the great majority of cases, and still be within the limits of safety."

The method of dilatation adopted in this case differs from the above in the important fact that I did not attempt to determine the exact position of the cardia by measurement. Neither did I try to dilate the contracted cardiac orifice by inflating the balloon while this was engaged in the constricted ring. I tried to do this in the beginning, but I always felt an uncertainty as to the exact position of the balloon in the esophagus. The first attempt at dilatation in this case was made after the balloon had been placed in situ and watching the relations of the metallic olive to the esophagus and stomach previously mapped out by a Bismuth mixture: but I could not satisfy myself each time



IMPROVISED AND MODIFIED PLUMMER APPARATUS FOR RETROGRADE DILATATION OF CARDIOSPASM.

No. 1 .Pilot thread carried through eye of metallic olive in dilating balloon.
No. 2. Hyrdostatic dilating balloon or water bag.
No. 3. Gastric rubber tube connected to manometer (5) by (8) V-shaped tube and drainage or outlet tube (4).
No. 4. Outlet of drainage tube which controls the tension in the dilator.
No. 5. Manometer (Jeckh water gauge, U. S. Gauge Co.)
No. 6. Hydrant or tap connection to supply the dilator.
No. 7. Heavy copper wire stylet to stiffen gastric tube when introducing dilating bag into stomach.
No. 8. V-shaped joint to connect hydrant and stomach tube and water gauge.



No. 2.

TO SHOW DETAILS IN THE MAKEUP OF THE WATER BAG DILATOR.

1. Olive-pointed metallic tip with large eye for the pilot thread; eye large enough to allow knots and snarled thread to pass through. The olive is provided with a hollow stem ½-inch long, which allows the stiff wire stylet to hold firmly in the socket without liability to displacement while the dilator tube is introduced into the stomach.
2. Gastric rubber tube perforated at the tip to allow the attachment of the olive at the tip, and with leak holes in the sides to fill the jacket with water.
3. Rubber jacket to be cemented and fitted to the gastric tube, constituting the water chamber.
4. Silk cover to protect the rubber jacket and prevent undue and irregular expansion of the water chamber.
5. External rubber jacket to fit loosely over silk cover, intended to facilitate the introduction of the completed and lubricated dilator.

that the balloon was being dilated in the cardiac ring. It seemed to me so much easier to introduce the collapsed balloon into the stomach directly and then, after dilating it to the desired size, as shown by the manometer, to engage the contracted ring from the gastric side, and then dilate it by extracting it (the distended balloon) from below upwards. In other words, we substituted *retrograde* dilatation for intra-cardiac dilatation. In this way, the sense of resistance of the stricture, as well as of the yielding of the stricture, when the resistance had been overcome, was unmistakable and greatly simplified the procedure.

By introducing the bag into the stomach in a collapsed state and then filling it with water under pressure from the tap, a sausage-like cylinder two and a half to three inches in diameter is obtained (equal to 5 lbs. pressure in the gauge) which being gradually extracted from the stomach by steady traction from above, with the gastric tube, safely dilates the cardia by allowing the operator to feel constantly the degree of resistance that he is to overcome.

The water gauge should always register the amount of dilatation. When the balloon is in the stomach, water is run into it until five pounds pressure are registered in the gauge. Then traction is begun, and as resistance is encountered in engaging through the spastic area, the water is allowed to run out until the pressure falls to three or three and a half pounds, as the resistance increases. In our first dilatation we got the balloon through the stricture with a pressure of three pounds in the gauge. In subsequent dilatations, the pressure has been three and a half pounds, and once four pounds. After the resistance is overcome, the water in the bag is allowed to run out and the balloon is extracted from the esophagus in a collapsed state. One of the advantages of this retrograde dilatation is that the dilator enters the contracted ring as a wedge or a cone, from below, and gradually stretches the stricture to the maximum diameter desired as it is being extracted, by traction, on the apex of the cone. In extracting the dilator no violent or sudden efforts are permissible. Traction is made against the resistance for one or two minutes at a time. When the patient complains of marked retro-sternal pain, the balloon is allowed to go back or the pressure is diminished by allowing some of the water to run out of the controlling drainage tube. The same attempt

is repeated gently but steadily for four, five or more times, each time with a little more insistence until the resistance is overcome. No blood-stain should appear on the dilator or in the stomach washings following this procedure.

After the first dilatation, marked improvement was noticed in the patient's condition. The patient was able to eat and drink freely and comparatively little residue remained in the pouch. Sleep became normal and a rapid gain in flesh and strength was noticed. From October 15, 1914, to May 10, 1915, the dilator has been applied six times. On May 9 the patient had gained thirty-six pounds and has returned to her boarding school. As a precautionary measure, she has been advised to return for examination every six weeks or two months. As the patient has become an expert with the gastric tube, she has been making weekly explorations or lavages of the stomach to determine any possible recontraction or the presence of any residue in the pouch.

The radiograph exhibited in this plate, taken in March, 1915, immediately after the administration of a Barium meal (Pl. I, fig. 2) shows the esophageal pouch empty and free from food residue, proving that whatever pouch there is, it has enormously contracted. The stomach is full and much larger than when the patient was first radiographed and before the treatment began. The stomach has enlarged and resumed its normal capacity with a return of its functional activity.

COMMENTARIES.

The cardiospasm in this case was probably caused by some form of ulceration or fissure at the cardiac end which excited reflex spasm and which had its origin in early years in the ingestion of a minute quantity of caustic lye. The rapidity with which the obstruction at the cardia yielded to dilatation makes it almost certain that the spastic contracture preponderated as the cause of the obstruction. This case, which we have selected out of a dozen instances of cardio-spasm that have come to us for treatment in the last three years, confirms the opinion that cardio-spasm is only a condition or pathologic state which may be brought about by a variety of causes, some of which still remain unknown. This case illustrated the simplicity of dilatation by utilizing the well-known thread guide originally

suggested by Mixter, and the principle of the hydrostatic dilator which has been made familiar to the profession by the excellent work of Russell, Plummer and Lerche.

I have laid stress upon the technic adopted in this case to show the ease with which the dilator can be improvised, and also because it has satisfied me that the method of retrograde dilatation, by extracting the dilator from the stomach through the contracted area, in the manner previously described, still further simplifies the procedure and adds to its efficiency and safety.

The fate of the esophageal pouch, especially when it has attained the large proportions that were observed in this case, is a matter of serious concern. The radiographic and fluoroscopic image of the esophagus obtained four months after the dilatation of the stricture had been accomplished, showed that the pouch had practically disappeared and had recontracted, as demonstrated by a total absence of all food debris, not only by the fluoroscope but by the systematic washing of the esophagus with the gastric tube. This excellent result is attributable in part to the fact that for over two weeks after the dilatation had been effected, the patient washed out the esophageal pouch regularly with plain water and fed herself with liquid and soft foods introduced through the gastric tube in order to avoid accumulation and over-stretching in the lower pockets of the pouch.

There is no question that in these cases the best results are obtained by the closest attention to details on the part of the operator and by the intelligent co-operation of the patient in faithfully carrying out instructions, which was pre-eminently true in this case.

Obs. 2.—Epiphyseal osteo-chondroma of the upper rim of the acetabulum of the hip joint. Extirpation of the growth without injury to the joint. Recovery. (Clinical notes by Dr. Levy, Resident Officer, Touro Infirmary.)

Miss E. R., of D., Texas, age twenty-one years, was admitted to the Touro Infirmary on December 30, 1914.

Family History: Mother and father living and well. Seven brothers and two sisters all living and well. Negative history for tuberculosis or malignancy.

Previous History: Patient had been well all her life. Has

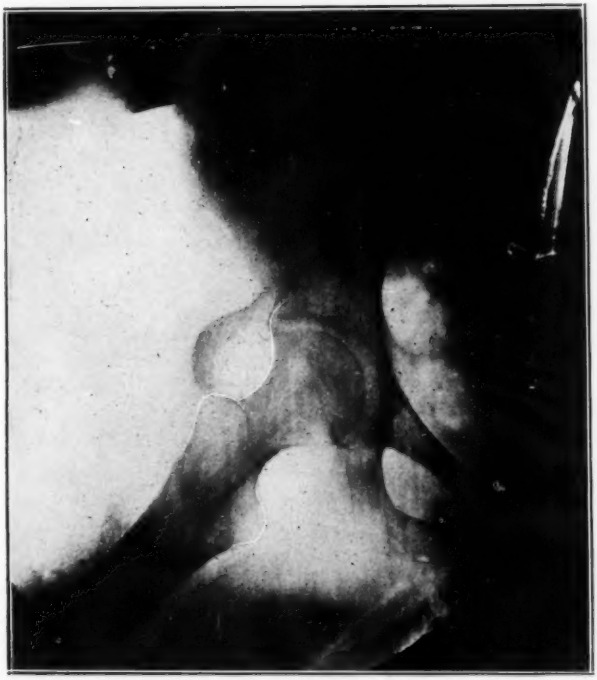
had measles and whooping-cough when a child. Had neuritis (?) in both thighs two years ago, which lasted one and one-half years; had severe pains in both limbs. Was entirely cured by electric treatments. Has never had any injury or fall or trauma of any kind in the thighs. Has lost about ten pounds in the last six months. Bowels constipated. Appetite good. Urination normal; menstruation normal.

Present Illness or Injury: The patient has been well up to seven months ago, when the patient began to feel a stiffness in the right hip joint, with a dull aching pain in the joint. Pain was more or less present all the time, but was increased by walking and became less when she would remain quiet at nights. The pain and stiffness became so bad that she had to take to her bed and stayed in bed three weeks, getting up at times to make a few steps. This disability has continued in this way with little change except that two months ago she had felt a little better and was up walking about when she slipped, but did not fall—she caught herself, but injured her hip. It pained her very much after the strain, and since that time she has gotten worse. She has walked with a limp, and since that time has grown worse. Has walked with a limp since the pain started. The limb was splinted at the time of the fall and for two weeks after. She has been getting worse, weaker, thinner and paler since, being in bed more or less all the time.

Sleeps very poorly, and is very nervous. Pain is dull in character in the region of the hip and does not radiate, though at times the whole thigh pains her. The limb feels dead at times. Her foot "goes to sleep" often.

Physical Examination: Patient is well-developed, rather thin and pale. Physical examination negative, except for the thigh. There is great tenderness over the whole area about the right hip joint. There is some hardness and induration above the trochanter, but it is very slight. Some fullness about the hip joint, and great tenderness on the slightest touch.

Several examinations have been made by prominent surgeons, who have examined her at home and in San Antonio, Texas, and various opinions have been expressed. The leading diagnosis was coxalgia or hip disease; but others have suggested after X-ray examinations that she might have a malignant tumor involving the hip. Dr. E. Hatch, who saw the patient at his office during



Obs. II.—(CASE OF MISS R.)—EPIPHYSEAL OSTEO-CHONDROMA OF THE UPPER ACETABULAR RIM GROWING INTO AND DISABLING THE HIP-JOINT.

No. 1. Radiograph of hip-joint in Miss R's case, showing pediculated epiphyseal osteo-chondroma of the rib of the acetabulum growing into the hip-joint and causing disability by locking the joint inflection and abduction.

Finger- resp. griffelförmige Exostose (E) mit Knorpelüberzug am unteren Ende (a) bei einem 18jährigen Manne, 9 cm lang und von der Spina iliaca anterior inferior dextra ausgehend (nach H. Braun).

No. 2. Copy of a drawing showing a finger-shaped exostosis which originated from the right anterior inferior spine of ilium and caused a functional disability stimulating an ankylosis of the hip joint. While very different in origin and in its relation to the joint, this case is the nearest approach to that of Miss R. reported in the text (originally reported from Volkmann's clinic in Halle, by H. Braun in Deutsch Zeitschrift fur Chirurgie, XXX 1890, p. 199, and reproduced in Tillmann's Chirurgisch. Krankheiten des Beckens Deutsch. Chirurgie, Lief, 62a, 1905.)

Dr. Matas' absence, recognized a tumor of the hip, but would not commit himself upon its true nature.

The patient was advised to have an exploratory incision. She returned to her home in Texas and then came back to Dr. Matas, who had other X-ray plates made by Dr. Samuel, Radiologist of the Infirmary, which showed the tumor mass very distinctly. The fluoroscope and X-ray plates show a mass, well circumscribed, about the size of an egg, seemingly attached to the upper edge of the acetabulum, hanging over the neck of the femur, and moving with abduction and adduction. The fact that the tumor moved with the head of the femur suggested that it must be pedunculated. This also suggested to Dr. Matas that it probably was an epiphyseal enchondroma; but whether it involved the joint and had grown from the femur as an intra-articular growth or was a purely extra-articular tumor which was growing downwards into the joint but still remaining outside of it, could not be definitely determined. The conviction grew with the X-Ray examination, that the tumor was benign osteo-chondroma in character.

Operation at the Touro Infirmary on December 3, 1914.

REPORT FROM NOTES DICTATED BY DR. MATAS.

The operation was performed under gas-ether anesthesia. A slightly curvilinear incision was made over the hip joint, about six inches in length, with the center of the incision touching the great trochanter. After dividing the aponeurosis and the fibres of the glutei, the tumor was recognized as it rested on the capsular ligament of the joint, displacing the tendon and belly of the pyriformis.

The tumor filled the space between the upper rim of the acetabulum (iliac portion) and the great trochanter. It had formed a deep hollow or nest for itself in the upper and posterior surface of the joint. The capsular ligament had been thinned by pressure atrophy; but was otherwise intact. The tumor, which was ovoidal in form, was about the size of a small egg and was hard and osteo-cartilaginous in structure. When mobilized after careful dissection with elevators, it was found to be pediculated with the pedicle attached, by a broad and hard osteo-cartilaginous base about one inch and a half in

thickness, to the rim of the acetabulum and the surface of the ilium immediately below, and to the outer side of the anterior inferior spine.

The pedicle was chiseled off from its base of attachment, leaving a broad smooth and clean osseous surface. As previously stated, the growth had moulded itself to the space bounded by the trochanter major externally, and the ilium on the proximal side, growing downward towards the joint, in consequence, no doubt, of the muscular pressure and resistance of the muscles and tendons, especially of the glutei, the pyriformis, and deflected tendon of the rectus.

The tumor evidently followed the movements of the joint, but, by wedging itself between the trochanter and its fixed attachment to the ilium above the acetabular rim, interfered with the movements of the hip-joint in abduction, outward and inward rotation, and, to some extent, in flexion. The tumor weighed 40 grams, and measured 5 by 5½ cms. Sections of the tumor showed it to be a pure fibro-chondroma.

After the extirpation of the tumor, the hollow space left vacant was filled by overlapping the muscular fibres of the gluteus medius and minimus. The fibres of the maximus and aponeurosis were separately sutured with catgut, and the cutaneous incision closed with silk-worm suture, without drainage. A plaster cast was then applied over the pelvic girdle, thigh and leg, to the ankle, which completely immobilized the limb.

The cast was removed on January 13 (fourteen days after the operation) when the wound was found to have healed completely and throughout, by first intention. A small gauze dressing, held in place with adhesive plaster, was then applied over the scar. The patient was allowed to sit up on the twentieth day, and began to walk about on the twenty-fourth day after the operation. She was out of the Infirmary, riding in a carriage on the twenty-sixth day, and was discharged on the twenty-seventh day, January 26, 1915.

The patient's convalescence was rapid and was only interrupted by a mild attack of influenza, which was prevailing in the city, during the first week following the operation. At the time of discharge, the patient walked without support with a cautious and stiff gait, favoring the affected side, as the result

of rigidity of the sutured muscles; but with completed restoration of the movements of the hip-joint, except for a limitation of about 20 degrees in extreme flexion of the thigh on the pelvis, which is attributed to the same cause.

The patient was advised to exercise the hip by walking and by exercises which will develop the flexion and extension of the joint, hot baths, massage and passive movements. The patient has since recovered her normal gait completely.

COMMENTARIES.

This case is of special interest from the diagnostic point of view. The history of the patient shows plainly that even the most experienced practitioners may be confused and misled by the symptomatology and appearance of such a case, and that the diagnosis of hip-joint disease and of malignant tumor of the para-coxal region will readily suggest themselves, unless the resources of the X-Ray clear up the obscurities of the clinical history by unmasking the real character of the bone lesion.

In this case, the fluoroscopic image obtained while the hip-joint was studied in various attitudes and in motion, and by repeated radiographs which gave still greater definition to the structures in the involved area, permitted an almost positive pre-operative diagnosis and prognosis. The operation only confirmed what had been clearly demonstrated by the X-Rays. The gross, as well as the histological findings, of the tumor also confirmed the diagnosis of epiphyseal osteo-chondroma.

While chondromata and osteo-chondromata of the pelvis are far from rare, this particular type of epiphyseal outgrowth is quite unusual. I am not acquainted with an exactly similar growth recorded in the literature. The nearest approach to this form of isolated epiphyseal growth is in the two cases operated by Volkmann of Halle, and reported for him by H. Braun in the *Deutsch Zeitschrift f. Chirurgie,* 1890, p. 199, in a paper on rare forms of finger and pencil-like exostoses, which is also quoted and illustrated in Professor Tillmann's excellent monograph on the surgical diseases of the pelvis, in the *Deutsch. Chirurg. Lief.* 62a, 1905, p. 711. (See fig. 2.)

I have attached an illustration from Braun's paper, showing the finger-like growth which Volkmann removed from the right ilium close to the hip-joint. By comparing the radiograph of

Miss R.'s case with Volkmann's, the great differences in the shape and position of the two growths are very apparent. However, there is no doubt that in their origin as epiphyseal outgrowths, and in their disturbing effects upon the function of the hip-joint, they are very similar.

The great advantage that we enjoyed in the treatment of our patient was that the X-Rays gave us a clear insight into the conditions that we would meet in the operation, an advantage which was denied to Volkmann twenty-five years ago.

The first to observe this type of bone growths, to which he applied the special name of exostosis cartilaginosa, was Sir Astley Cooper, who, however, did not differentiate strictly between epiphyseal exostoses and enchondromata. It is apparently due to Virchow (1864) that the anatomical and histological differentiation between these growths was first established.

The starting point of these exostoses is probably a particle of persistent primitive bone cartilage or, in other cases, a displaced cell mass of the epiphyseal or even articular cartilage. Proliferation and secondary ossification is inherent to the cells. For this reason, they are peculiar to early growths and usually, although by no means invariably, stop growing when the normal period of ossification in the parent bones has been completed—an observation which was emphasized long ago by Syme.

In our case, the tumor seemed to grow from the epiphyseal cartilage of the ilium at the upper rim of the acetabulum. As it grew downwards, it formed a nest for itself in the trochanteric fossa, and the constant movement of the joint gave its free or movable portion a globular or pyriform shape. It caused no serious inconvenience until it grew large enough to wedge itself between the trochanter and the head of the femur, thus interfering with the abductor and flexor movements of the hip. Traumatism appears to be a frequent exciting cause of these bone growths which may be tolerated for years without causing notable interference with the joint movements. In this case, the fall, sustained by the patient, on the hip, greatly accelerated the growth of the tumor, as is shown by the rapid, almost sudden, increase in the disability which already existed to a moderate extent before the accident.

The prognosis of these growths is excellent. I have had a good share of experience in the removal of epiphyseal exostoses

in almost all the long bones of the skeleton, and when they were pure exostoses osteochondromata of the epiphyseal regions, occurring at puberty or adolescence, or at the close of the period of ossification, they have never recurred after thorough removal.

(*To be concluded in November* JOURNAL)

INFECTIOUS DIARRHEA.*

By CHARLES J. BLOOM, B. S., M. D.,

Junior Pediatrist, Presbyterian Hospital; Visiting Pediatrist, Chartiy Hospital; Clinical Assistant, Touro Infirmary, New Orleans, La.

The results accomplished by staff members of the Boston Floating Hospital need only to be mentioned, in order to remind one of the splendid research work accomplished by them. The work of Kendall and his associates has meant perhaps more regarding the bacteriological etiology of infectious diarrhea than any similar investigation given to the profession up to the present time. Accepting the facts as established by him, and noting what additional work he completed during the summers following, has left but little indeed to be desired on this particular subject. For matter of convenience, the following outline has been compiled and will serve as a guide to the work:

I—Review—Etiological Factors. II—Method of work. III—Brief Histories of Cases. IV—Clinical Manifestations: A—Age, B—Sex, C—Nationalities, D—Previous Food, E—Duration of Illness, F—Facies, G—Vomiting, H—Diarrhea, I—Weight and Emaciation, J—Neurological Findings, K—Temperature, L—Respiration, M—Pulse. V—Classifications. VI—Mortality. VII—Relation, Temperature, Food and Bacteria. VIII—Summary. IX—Bibliography.

I—REVIEW—ETIOLOGICAL FACTORS.

The history of the causative factors of infectious diarrhea presents a most interesting narrative. As early as 1880, (1) Day remarks:—

"It (Infectious diarrhea) was so frequent during the period of first dentition, that some writers considered dentition a cause. (Louis Smith.)" "It is in my experience, far more frequently due to atmospheric influences and errors of diet. Among the other causes of this form of diarrhea may be enumerated, damp and cold, and transitions of weather, but errors in diet would appear to be a fertile source of

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its origin. If the nurse's milk is too rich or in any way unhealthy, it is very likely to set up diarrhea in this form.*

Following, in 1882, Meigs and Pepper[2] say:

"Heat is one of the most influential of these causes. Improper diet is another frequent cause of choleraic disease in hot weather. Sudden weaning, a change in the character of the artificial food, the use of unwholesome milk and imprudences relative to food with unhygienic conditions are some of the other factors mentioned by them."

They also quote from the Report on Epidemic Cholera to the Citizens' Association of New York in 1865, giving as the localizing causes of cholera: 1. Decaying organic matters, bone, hide, fat and offal houses, neglected stables, putrescent mud and filth. 2. Bad drainage, local dampness, malaria. 3. Obstructed sewers, filthy streets, gutters, stables, garbage and cesspools. 4. Water and beverages in any manner contaminated by putrescent organic matter, particularly by any soakage from privies. 5. Neglected privies and putrefying excrement. 6. Overcrowding and neglect of ventilation. Smith (J. Louis)[5] likens cholera infantum as identical with thermic fever (1896). Smith (Eustace)[3] in 1884 says:

"Diarrhea is especially a complaint of warm weather and summer heat and must be looked upon as a powerful predisposing cause of the disease. Injudicious feeding, bad drainage and the effluvium arising from decaying organic matter;"

are the principal causes of this complaint. Vogel[4] in his book, published in 1885, says that diarrhea attacks children in the first dentition, and older ones in the hot summer months, at the season of unripe fruits. Pediatricians of the present time are for the most part in the belief that the eiology of infectious diarrhea has some relation to bacterial invasion and secondarily to dietetic indiscretions and thermic disturbances.

However, it remained for some one to discover the type of organisms causing the said diarrhea, and Kendall, beginning in 1910, completed perhaps the most detailed work on this subject which we have received up to the present date. The summaries

*The above extract is the earliest expression that I could find relative to the etiological factors in infectious diarrhea of children. The Rotch Memorial Library of the Infants' Hospital and the Boston Medical Library were the ones used with reference to this work. The former is perhaps the most complete library on Pediatrics that we have in this country.

and conclusions of said work will be given in the paragraphs to come. Hiss & Zinsser[6] give us a very complete history with reference to the streptococcus organisms and note the fundamental studies of Pasteur and Koch[7] in 1881 along this particular line. Streptococci referable to intestinal invasion belong to Group No. 1. *Streptococcus pyogenes* and to Group No. 5 *Streptococcus fecalis* as suggested by Andrews and Horder.[8] With reference to the *Streptococcus fecalis,* this type is found normally in the intestines; but becomes occasionally pathogenic. The second organism found in the stools of cases having infectious diarrhea was the *Bacillus aerogenes capsulatus*. This organism was the first observed by Welch in 1892 and was considered as a normal inhabitant of the intestinal canal until further experimentation by Kendall and Smith. The third and principal organism isolated, in which was the causative agent of the greater number of cases during the past summer, was the *Bacillus dysenterii Flexner*. The *Bacillus dysenterii* as the etiological agent in the epidemics of a bacillary form of dysentery was first isolated in Japan by Shiga[9] (1897), Flexner and Strong[10] (1898) discovered, in the Philippine Islands, another strain coming within this group! Again in 1902 Vedder and Duval[11] published articles in which they claimed a similarity for the various forms which had been described previously by Flexner and Shiga. In 1903 Hiss and Russell[12] also isolated a bacillus which in many ways resembled the one previously described by others. Since then, many other bacteriologists have found different strains of this *Bacillus dysenterii Flexner*. The writer has endeavored to give a brief history of the bacteriological flora which caused the dysentery of the past summer. In some the typhoid bacillus and the para-typhoid were recovered; but inasmuch as the cases were few and the finding not unusual, they have not been considered seriously. Williams[13] has perhaps given us the best description of the factors mentioned above. He states that summer diarrhea, particularly the acute form, is favored by congestion of tenements, lack of ventilation and unhygienic surroundings. Added to this, the summer temperature produces a diminished resistance on the part of the child which renders the one to differences of temperature and the risks of chilling at sundown. The question of food is a predisposing factor in summer diarrhea

and will be discussed by the writer at a time when he considers the relation of food to the final outcome of the cases herein represented.

The Bacteriological findings are the results of the untiring work of Dr. Carlon TenBroeck, the Bacteriologist of the Floating Hospital. It seems proper, therefore, that the summaries and conclusions by Kendall, Day and Bagg[14]; Kendall[15]; Kendall and Smith[16] should be cited in detail.

Review of Work on Dysentery (Bacteriological).

"In spite of the excessive and protracted heat of the past summer, the number of admissions and the severity of the cases was not above that of the previous summer. It is not justifiable, therefore, to assign extreme heat as the etiological factor in the causation of these summer diarrheas. Again, it is impossible in most cases to distinguish between improper feeding per se and improper feeding as a predisposing factor to bacterial infection.

"The microbic theory of disease is too firmly established to need further discussion. This year, however, it was shown that one or more organisms which hitherto would have been deemed sufficient to establish a satisfactory diagnosis, were repeatedly recovered from certain individuals in whom there was no suspicion or past history of infection. In a majority of these cases it would appear that these organisms occurred in the host as harmless saprophytes rather than as pathogens. Furthermore, the summer's observations show conclusively that the blood, pus and mucus, so common in intestinal infections in children, is not pathognomonic of any specific organism. Several cases, which prior to death were diagnosed as bacillary dysentery because of excessive amounts of blood, pus and mucus at autopsy showed no demonstrable lesions of the intestinal tract which would account for the blood and pus; indeed, the cause of death could not be ascertained either ante or post mortem.

"The universal experience of the past has been that the Flexner cases far outnumber the Shiga cases; last summer the Shiga cases exceeded in number the Flexner cases.

"In view of the fact that paratyphoid bacilli are somewhat widely distributed in nature, it is not surprised that they were met with in a number of the cases. It is impossible in the cases mentioned here to measure their etiological importance. It is interesting to note in this connection that the typhoid bacillus was not found in a single case.

"As for the streptococcus, which was found in such large numbers, the diagnosis was made in many of the cases by exclusion, no other significant organisms having been found. This does not mean that other organisms might not have furnished the conditions which enable the streptococci to increase abnormally. It would not be

justifiable, however, to exclude the streptococcus from the list of pathogenic bacteria, after taking into consideration those cases which showed such distinctive lesions at autopsy. Even during life, the organisms were recovered in a number of cases from urine drawn with sterile catheters.

"Our observations show that the gas bacillus causes trouble—some or even severe diarrhea in children, yet it is of itself rarely the cause of death.

"The occurrence of organisms of the mesentericus group has been discussed. Our findings are not extensive enough to warrant any specific statements. The same holds true for the various other organisms which have been mentioned.

"**Conclusions.**—The striking fact brought out by the summer's work is that in every case of infantile diarrhea studied (with the exception of the few fermentative diarrheas) there was a general conformity in bacterial type of the intestinal flora, which was uniformly proteolytic in character. This proteolytic flora forms a striking contrast to that of normal children of similar age, in which the putrefactive activities are minimal. Superimposed upon this proteolytic background various of the well known intestinal pathogens may stand out conspicuously. In the past the isolation of such organisms has sufficed to establish the diagnosis; it now appears that such is not necessarily the case, inasmuch as one or more of them may be present without the production of noteworthy symptoms. On the other hand, cases are met with in which these organisms cannot be found, yet show blood, pus and mucus in the stools, and severe toxemia. In these latter cases the flora has been found to be proteolytic in character."

The above was the work of Kendall, Day and Bagg.[14]

"Generally speaking, the summer of 1910 in Boston was one in which dysentery bacilli were prominent; fully 75% (39 out of 52 cases) were due to these organisms. Gas bacilli were found in six and streptococci in significant numbers in those remaining. Streptococci were also present in about 60% of the dysentery cases, probably as secondary or terminal invaders. The summer of 1911 was noteworthy as a 'Streptococcus' year; 78 out of a total of 146 cases studied harbored large numbers of these organisms. A few of these patients died of septicemia, or perforation followed by peritonitis, others showed sequelæ of streptococcus origin. Dysentery bacilli were found in 18 cases (three of these were classed as bacilli carriers) although they were repeatedly sought for in several stools from each patient. Gas bacilli were recovered repeatedly from 33. 1912 was a 'gas bacillus' year; these organisms appeared in unusually large numbers in 53 out of 135 cases examined. Dysentery bacilli were recovered from five cases, and streptococci from but six. That is to say, the very severe, acute summer diarrheas of bacterial

causation present a very constant syndrome consisting of prostration and fever associated with mucus, pus and, frequently blood in the movements. It is frequently very difficult to determine the organism causing the disease. Bacteriologically considered these cases are of varied etiology, caused by organisms of very unlike characteristics. One year the dysentery bacillus was the dominant type met with, a second year streptococci were conspicuous, while a third summer was noteworthy because of the great number of cases in which the gas bacillus was the prominent organism encountered. It should be stated that each of the above types were found each year; the striking feature is the shifting of the dominant organism from year to year."

The above is the observation of Kendall.[16]

II—METHOD OF WORK.

The month of August proved ideal in every respect for: (1) there were different variations in temperature; (2) all types of infectious diarrhea were portrayed, and a sufficient number to justify conclusions under the different lines of research. For convenience and also for thoroughness, it was thought preferable to divide the infectious diarrhea into three groups. Group 1 to contain the cases in which the etiological factor was the *Bacillus dysenterii* Flexner; Group No. 2, the causative factor being the *Bacillus welchii;* and Group 3, containing the cases with a mixed infection. The organisms found under the third group included: (a) *Bacilli welchii,* (b) *Bacilli paratyphoid,* (c) *Bacilli typhoid,* (d) *Streptococci.* Indeed the writer is glad he did so, because there were several negligible quantities made out, which would otherwise have been omitted. Each morning the bacteriologist would give me a list of new cases, namely, those which were suggestive from the clinical manifestations alone. I would, then, on the same day, begin the investigation from the hematological standpoint. Every other day a total white count and a differential would be made on the cases while in the acute stage. During the convalescent period, the blood would be examined not less than every fourth day. In this way I would study the case from the admission and would follow each one until the bacteriological evidences for our work would be negative for three successive examinations. During the period of research there were over fifty cases followed and the writer chose twenty-five of this number, because a great many of the remaining cases proved to be

other than infectious diarrhea, although clinically a number of them were thought to come within this group. The average number of blood pictures per case numbered not less than five, and not more than ten. Every day a visit in person to the individual cases would be made and notations recorded. One day out of each week the work for the previous six days would be recapitulated, and if it was felt more time was needed, the writer would take an additional half day. It is hoped that the facts obtained along this line will be the stimulus for additional work, for indeed the blood manifestations of dysentery has been in the past a wanting quantity.

III—THE CASES.

In considering these twenty-five cases the writer shall only endeavor to give in detail the present illnesses, and shall leave unsaid the past history unless there is a condition which would have some material result on the case in question.

GROUP NO. 1.

Case 1—Angelina L., aged seven months, of Italian parentage, was admitted to the B. F. H., July 27, 1914. She had been well up to one day prior to admission. The patient was breast fed until three days ago when modified milk was substituted.

Present Illness.—This child has always given a history of vomiting five minutes after each feeding, and during her illness this condition has not changed. On the whole she has never been a very strong child.

The dejections numbered two or three daily, large, yellowish green in color, watery in consistency, and foul in odor. Maximum temperature since admission, 101° to 102°; minimum temperature, 96° to 97°; pulse, maximum, 130 to 140; minimum, 100 to 110. Respiration, maximum, 34 to 40; minimum, 25 to 30.

Taking everything into consideration, it is not believed said child will recover, for she seems dreadfully prostrated and gives all the typical characteristics of a bacillary dysentery—of a rather severe type.

Case 2—George O'C. was admitted August 5, 1914, being ten months old. His prostration was perhaps the most marked in cases seen during my stay aboard the Floating Hospital. He lay practically lifeless and the only time he would give vent to his feelings was when one moved him; then he would utter a feeble cry. He was breast fed for one week only and since birth he has had various modifications of whole milk. He seemed to relish the food and gained somewhat in weight, although the formula given at the beginning was a trifle stronger than he should have received.

Present Illness. Perfectly well up to two weeks ago when he began vomiting, had fever and finally developed a diarrhea. The vomiting occurred one-half hour after meals and contained in quantity the amount of food taken previously. Fever lasted only one week. The diarrhea was mild at first, but became very severe, the dejections being small in quantity, green in color, watery in consistency, and containing mucus and curds.

Maximum temperature, 103° to 104°; minimum 101° to 102°. Maximum pulse, 140 to 150; minimum, 120 to 130. Maximum respiration, 50 to 60; minimum, 35 to 40.

This child is a type of the most severe form in which the toxic symptoms are greatly exaggerated and few if any recover; therefore the prognosis is grave and it appears that this child will die.

Case No. 3—Lester O'C, twin brother of Case No. 2, was admitted two days prior to his brother. He displayed practically the same clinical picture described for his brother with the single exception that the toxic symptoms were slightly less marked. He was breast fed for one week after which he was given an unknown modification of whole milk with barley water and this not agreeing with him, his parents resorted to feeding the child on barley water alone.

Present Illness. He began vomiting one week ago. The vomiting occurred immediately after the intake of food, was projectile in character and contained in quantity about three quarters of the food previously taken. He had a slight diarrhea, the dejections numbering from four to five daily, large in amount, green in color, foul in odor, and with few small, soft curds.

Temperature, maximum, 103° to 104°; minimum, 101° to 102°. Pulse, maximum 170 to 180; minimum 130 to 140. Respiration maximum, 40 to 45; minimum 25 to 30.

The picture, as noted from this case, sunken eyes, clear sclera, starey look, ruby red lips, flaccid skin, a degree of anemia and a lifeless form, can mean but one verdict, namely death.

Case No. 4—The parents of Richard S., eight months old, are of American birth and appear to be above the average in intelligence. Patient was breast fed for one and one-half months. He made no material gain on this food, so he was given a food consisting in the great part of sucrose, after which a barley flour gruel was substituted in alternate feedings; then oatmeal jelly was used, which finally gave way to Quaker Oats. The mother, thinking that the child was not gaining sufficiently, gave in addition to the last named food, a modification of whole milk.

Present Illness. The duration of his illness numbered six days. The initial symptoms were fever, marked prostration, diarrhea, the dejections numbering twenty, green in color, water in consistency foul in odor and containing curds, blood and mucus.

Temperature, maximum 104° to 105°; minimum, 99° to 100°.

Pulse, maximum 160 to 170; minimum, 110 to 120. Respiration, maximum, 50 to 60; minimum, 30 to 25.

Although there have been remissions of temperature and a slight improvement in the general condition, the persistence of a large number of dejections containing blood, pus and mucus, with a high temperature, despite scientific treatment, tend to make the probabilities of recovery very meagre. The chances are against his getting well.

Case No. 5—Mary D. was taken sick two months prior to her entrance to the B. F. H., which was August 7, 1914. She is eighteen months of age and her parents are Americans. Mary nursed for ten months, then was given the proper milk modification and continued to thrive until two months before admission.

Present Illness. Her present condition dates back indefinitely to about two months ago, when she began to have a very marked diarrhea, which at times would become less severe, and at other times would have marked exacerbations. Her real illness began August 4, 1914, when her mother noticed that in addition to having severe dejections, numbering eight daily, which showed mucus, curds, a watery consistency, foul odor, there was also strong evidence of blood.

Temperature, maximum 100° to 101°; minimum, 98° to 99°. Pulse, maximum 150 to 160; minimum 120 to 160. Respiration, maximum 35 to 40; minimum 20 to 25.

Mary seems to be quite sick but the very fact that she has been ill for some time, that her temperature is not very excessive, and that her tout ensemble is good, makes one give her a favorable prognosis.

Case No. 6—Born of American parentage, Louise P, aged 21 months, was admitted to the B. F. H. August 3, 1914. The patient was breast fed for fifteen months, followed by whole milk, potato, bread, soup, ice cream and cracker three times daily.

Present Illness. Her sickness was ushered in by diarrhea, fever and a fair degree of prostration five days before admittance to the hospital. Her fever was rather low and she vomited occasionally. The dejections numbered seven to eight, green in color, consistency soft, odor foul, and containing blood, pus and mucus. Since her initial attack she has received whole milk.

Temperature, maximum 102° to 103°; minimum, 99° to 100°. Pulse, maximum 130 to 140; minimum 90 to 100. Respiration, maximum 40 to 45; minimum, 25 to 30.

Patient gives signs of a rather progressive type of infection with slight resistance and a virulent organism. Temperature, though not very high, is persistent and coupled with this is an accelerated pulse and an increased and irregular respiration. Her condition is becoming worse (although her dejections are improving). However, one

cannot consider the whole satisfactory, and no doubt she will succumb to the illness.

Case No. 7—Born in Louisiana, of American parentage, Sylvia S., 19 months old, was brought to the hospital July 29, 1914, in a very precarious condition. Her past history is that she was fed at the breast three months, followed with Eskay's food which was continued for seven months, she was then given modified cow's milk, gradually increasing to whole milk at ten months of age. Added to her diet were gruels of various sorts, bread, rice and wheat.

Present Illness—Her present condition dates back seven days. The initial symptoms were fever, diarrhea but no vomiting. The dejections were few in number, of watery consistency, foul odor, containing blood and mucus. The patient showed a slight degree of prostration.

Temperature, maximum 101° to 102°; minimum, 98° to 99°. Pulse, maximum 130 to 140; minimum, 110 to 120. Respiration, maximum 40 to 45, minimum 25 to 30.

The case of Sylvia presents a somewhat different picture from those previously cited. Her condition became progressively better, her stools less pathological, her temperature gradually receding, with pulse and respiration in accordance. This case will undoubtedly recover.

Case No. 8—Margaret Mc'D, seven months old, is of Irish ancestry. She was always healthy prior to her present illness, and had been breast fed during her entire life.

Present Illness—Margaret's sickness dates back two weeks. The first symptom was that of diarrhea, mild in character, green in color, watery in consistency, foul in odor, containing curds, blood and pus, vomiting twice during the interim. It might be well to state that since the beginning of her illness she has been taking small quantities of brandy with her food.

Temperature, maximum 101° to 102°; minimum, 98° to 99°. Pulse, maximum, 140 to 150; minimum, 90 to 100. Respiration, maximum, 45 to 50; minimum, 25 to 30.

The case of Margaret presents a very difficult type to prognosticate. She never seemed to be very ill. Her condition in every way was satisfactory excepting the persistence of the definite dysenteric stools. In fact we thought she would recover, when without any particular warning her temperature, pulse and respiration all became higher and she died shortly afterwards. The one point, namely, the inability to clear the stools perhaps might account for the continuance of absorption from the intestinal tract, other than this it is impossible to give the true status of her fatal termination.

Case No. 9—Louis R., twenty-one months of age, was of Italian parentage, and had always given a negative history. In fact this was the first time he had been really sick since birth. Although improperly fed from the start, he never gave any symptoms which

would be in accord with these facts. He was admitted to the B. F. H. August 16, 1914. For fifteen months in addition to breast feedings, he was given the ordinary table diet.

Present Illness. Thirteen days ago he first began to have diarrhea, some fever, and a mild coryza. The movements were twelve to fourteen in number, blackish green in color, soft consistency, foul odor and exhibiting curds, blood and mucus. Associated with this was an occasional convulsion which would last as long as twenty-four hours.

Temperature, maximum, 100° to 101°; minimum, 98° to 99°. Pulse, maximum, 120 to 130; minimum, 70 to 80. Respiration, maximum, 35 to 40; minimum, 20 to 25.

Louis has never appeared to be very ill, in fact he has had practically no fever, his pulse and respiration have been normal and his stools, though they have occasionally contained pus, blood and mucus, have been few in number, and coupled with this he has had the desire to sit up in bed and interest himself in surrounding things. This is no doubt a mild infection and in all probabilities he will recover.

Case No. 10—Joseph G., aged ten months, born of Italian parents, was brought to our institution August 16, 1914. He had never received breast milk, and the foods given him show marked variation indeed. Condensed milk and various milk-station formulas were tried and on the whole seemed inconsistent with proper nourishment.

Present Illness. For two and one-half days he has had slight fever and diarrhea and has vomited everything taken. The diarrhea is rather severe, the movements numbering twelve, the color yellowish green, the consistency watery, and odor foul, but containing no curds, blood, pus or mucus.

Temperature, maximum, 104° to 105°; minimum, 99° to 100°. Pulse, maximum, 180 to 190; minimum, 110 to 120. Respiration, maximum, 110 to 120; minimum, 25 to 30.

This case is again one of the severe type. The persistence of a very high temperature in an almost pulseless child, with a marked respiratory acceleration, indeed makes the prognosis very grave. In addition we note no clearing up of the stools, for he has exhibited a typical dysentery movement, the chances are undoubtedly against him. It does not seem as though he can possibly recover.

Case No. 11—James L. was indeed a splendid specimen of an infant when brought to the hospital August 10, 1914. The patient is sixteen months old and of American parents, and was breast fed for the greater part of his life, with eggs and light food in addition at about twelve months of age. He seemed to thrive very well on the varied diet he received.

Present Illness. He has been sick but three days, his complaint being diarrhea and vomiting with a slight degree of fever. The vomiting numbering ten to twelve daily, being immediately after

feedings. The movements occur every ten minutes, greenish in color, watery in consistency, foul in odor, showing few small curds, with a trace of blood and mucus.

Temperature, maximum, 102° to 103°; minimum, 98° to 99°. Pulse, maximum, 150 to 160; minimum, 90 to 100. Respiration, maximum 40 to 45; minimum, 20 to 25.

For a long time recovery seemed doubtful but on the ninth day of his hospital life his temperature dropped to normal, his facial expression became brighter and the other dysentery manifestations became nil. Therefore his resistance must have been excellent for the amount of temperature he had and for his quick response to the infection. In truth, he was a doubtful case.

Case No. 12—John F., aged eight and one-half months, is of Italian parentage, was admitted August 7, 1914. He had always been healthy up to the present attack. His dietetic history is not very definite but as far as could be learned he has received modified milk from birth.

Present Illness. Diarrhea with a slight degree of vomiting and fever began eight days ago. The vomiting did not persist, although diarrhea has become progressively worse. The dejections numbered fifteen to twenty-five, large in number, green in color, watery in consistency and foul in odor. There was blood in stools for three days, although mucus has been present since the onset of the illness.

Temperature, maximum, 100° to 101°; minimum, 97° to 98°. Pulse, maximum, 140 to 150; minimum, 80 to 90. Respiration, maximum, 50 to 60; minimum, 20 to 25.

This boy has had indeed a very mild infection, although his resistance is not what one might have expected, providing his previous life had been in accordance with modern ideas. However, his temperature, except for the first two days, has varied between 98 and 99. His pulse has always been strong, although a bit accelerated, and respiration has not been more than one would expect under the given conditions. Looking at him, though small in stature and frail in constitution, he does not impress me as a very sick child, and his chances are favorable for recovery.

Case No. 13—William D., aged eleven months, American parentage, was first admitted August 1, 1914. This is perhaps one of the most complete cases collected by me, and a detailed history of said case will be given in a paragraph to come. He was breast fed up to one month ago, since that time having received condensed milk with crackers and bread twice a day.

Present Illness. He has been under the weather for about two weeks. The initial onset was instituted with vomiting, diarrhea and some fever. The movements numbered ten, color green, consistency watery, odor foul, some curds, and for the past four days mucus has been noticed in the stool.

Temperature, maximum, 101° to 102°; minimum, 97° to 98°.

Pulse, maximum, 140 to 150; minimum, 80 to 90. Respiration, maximum, 50 to 60; minimum, 20 to 25.

This case typifies a marked infection with a low virulence, and on the other hand, a great resistance. With the exception of one day his temperature has not gone above 100°. The pulse was somewhat accelerated, and the respiration was more affected than any other noticeable symptom. His case has never seemed really serious, and at all times the child has been rather fortunate in escaping the marked emaciation as prevalent with these conditions. This case never seemed doubtful, and its recovery will be uneventful.

Case No. 14.—Daniel M. was one of many children in the same household who were attacked simultaneously with dysentery. He is four years and three months old, of Irish parentage, and was admitted on August 25, 1914. His dietary procedure in the past was from an unreliable source, but the facts gained showed that he has been fed previously on modifications of whole milk and proprietary foods, and that he had had but a few months of breast feeding. His food at the present time consists of the house diet.

Present Illness. For one week he had been suffering with diarrhea and fever, and at the onset he had one attack of vomiting. The diarrhea perhaps has been the most marked factor of his illness, for the movements numbered from ten to twenty and were of a very greenish color, of a watery consistency, having a nauseating odor, and showing a very large amount of blood, mucus and hard large curds.

Temperature, maximum, 101° to 102°; minimum, 99° to 100°. Pulse, maximum, 110 to 120; minimum, 90 to 100. Respiration, maximum, 25 to 30; minimum, 20 to 25.

Although Daniel M. has a marked infection with a rather high temperature and some prostration, the very fact that his pulse and respiration are about par, that his stools have diminished in number, and that his whole appearance is fair, and taking into consideration his age, recovery, although a great way off, will undoubtedly be the finale.

Case No. 15.—Salvatore I, of Italian parentage, eighteen months old, was admitted August 12, 1914. He was breast fed for an indefinite period and then was given soft foods and occasionally the house diet.

Present Illness. His condition dates back but four days, the initial attack being accompanied by diarrhea, some fever, but no vomiting. The diarrhea is severe with ten to fifteen movements, green in color, foul in odor, showing blood and mucus.

Temperature, maximum, 99° to 100°; minimum, 98° to 99°. Pulse, maximum, 140 to 150; minimum, 100 to 110. Respiration, maximum, 45 to 50; minimum, 25 to 30.

This is another example of a rather marked infection in which the

patient displays no degree of toxemia, and although languid, and slightly emaciated, and fretful, these cases do not as a rule end disastrously, but on the contrary, recovery seems assured and the type might be classified with the mild form.

Case No. 16.—Mark K., aged six, of Irish parentage, was admitted August 17, 1914. She had been breast fed for five weeks, followed by Horlick's Malted Milk.

Present Illness. The duration of the illness was three days, the temperature being 101 with a slight degree of prostration. Vomiting took place at the onset of the illness, and was somewhat projectile after feeding, the character of food being unchanged. The dejections numbered fifteen, the color being green, watery in consistency, foul in odor, showing curds, blood and mucus.

Temperature, maximum, 105° to 106°; minimum, 101° to 102°. Pulse, maximum, 160 to 170; minimum, 120 to 130. Respiration, maximum, 60 to 70; minimum, 15 to 20.

The severe grade of toxemia is the type which rarely overcomes the infection, and succumbs in the majority of cases. It is unusual that a child with a temperature of 105° to 106° and with a greatly accelerated pulse, irregular respiration, and a continuance of diarrhea in this acute form, recovers. This picture can have but one outcome, and that an unfavorable one.

The above sixteen cases are those included under Group No. 1, the etiological factor being the **Bacillus dysenterii** Flexner.

GROUP NO. 2.

Case No. 17—Born of Italian parents, Rose M., 17 months old, came to our hospital August 11, 1914. She was breast fed for seven months, after which she received in addition the ordinary house diet. Since eleven months her food has consisted of the house diet alone.

Present Illness. The child has been sick for one week. The chief complaints from the start were fever and diarrhea, four days after the initial attack she began vomiting and up to the present time has continued at irregular intervals, following the administration of food. The diarrhea consisted of from eight to ten movements, green in color, foul in odor, with a few white soft curds, blood, pus and mucus.

Temperature, maximum, 99° to 100°; minimum, 97° to 98°. Pulse, maximum, 120 to 130; minimum, 70 to 80. Respiration, maximum, 60 to 70; minimum, 20 to 25.

This case can be classified as a mild form of infectious diarrhea. She has demonstrated but little reaction, for the fact is that her temperature, with one day's exception, has never exceeded 99. The patient's pulse and respiration, while irregular at times, have kept within the limits of a normal individual of her age. Her condition

has become progressively better and one feels assured she will recover.

Case No. 18—Catherine O'N, aged five months, who was admitted August 20, 1914, has been breast fed since birth.

Present Illness. Three days prior to admittance she became ill, her movements were watery in consistency, green, slimy, containing mucus and numbering twelve.

Temperature, maximum, 99° to 100°; minimum, 96° to 97°. Pulse, maximum, 120 to 130; minimum, 90 to 100. Respiration, maximum, 50 to 60; minimum, 25 to 30.

Catherine has never seemed to be very much depressed. While she gives evidence of having lost in weight, the clinical picture of her long illness is absent. Taking into consideration her chart the prognosis is favorable for her recovery.

Case No. 19—Rita G., eight months of age, of American parentage, has always been a fairly well baby. At first she was breast fed, for one month, followed by Mellin's food and whole milk. Later on, bread and other soft materials were added to her diet.

Present Illness. Patient has been slightly under the weather for three weeks prior to admittance. Vomiting and diarrhea of a very mild character have been present for three weeks, but assumed a very severe nature three days ago. With this, fever has persisted. Her dejections are from ten to fourteen, watery, foul in odor, containing mucus and a few curds, and five days ago there was evidence of blood.

Temperature, maximum, 100° to 101°; minimum, 97° to 98°. Pulse, maximum, 140 to 150; minimum, 100 to 110. Respiration, maximum, 45 to 50; minimum, 20 to 25. One found a marked degree of emaciation in this patient; the very fact that she has been ill for a period of three weeks would necessarily account for her weakened condition. On the other hand, her temperature has not been very constant and she has responded splendidly to treatment, so that the outlook in this case seems to indicate a favorable termination.

Case No. 20.—Admitted to the B. F. H. August 24, 1914, Thomas McE. of Irish parents was breast fed two months, followed by modified milk and this in turn by condensed milk.

Present Illness. His present condition dates back two weeks, having had fever and diarrhea. The latter includes a typical dysenteric stool.

Temperature, maximum, 103° to 104°; minimum, 98° to 99°. Pulse, maximum, 120 to 130; minimum, 90 to 100. Respiration, maximum, 35 to 40; minimum, 25 to 30.

This case represents an infection of the most severe type. The patient's temperature has been rapidly increasing with a weakened pulse and shallow respiration. It is very questionable whether he will recover, because he has been ill for a period of two weeks with

a very poor reaction by the body as indicated by the temperature at this time.

Case No. 21.—John B., of Slavonian parents, is six months old and was admitted to the institution the 21st day of August, 1914. His past history is a very indefinite one. All facts obtainable seem to point to his having been raised in a very poor environment. He has been fed alternately since birth on breast and modified milk.

Present Illness. He had never been ill until two weeks ago when he began to have all the signs of the so-called summer diarrhea. He has had a great number of stools which have contained the ordinary constituence of blood, mucus and pus.

Temperature, maximum, 104° to 105°; minimum, 99° to 100°. Pulse, maximum, 150 to 160; minimum, 90 to 100. Respiration, maximum, 50 to 60; minimum, 30 to 35.

John B. is a very sick child. Perhaps no one case has demonstrated to me the picture often described in textbooks of the severe action which a virulent bacteria can cause. The child is almost lifeless. All osteological prominences can be seen and great loss in weight can be noted; the typical facies often depicted is readily made out. The constantly increasing high temperature with correspondence in the pulse and respiration mean sure death. From the few cases seen and from those described by other members of the staff, it is the unforeseen that occurs when a child of this type recovers.

The above five cases have as the etiological factor the **Bacillus Welchii.**

GROUP NO. 3.

Case No. 22.—Always considered a healthy child, Alfred A., aged seven months, was born of American parents. Although he only had breast milk one week his mother had endeavored to feed him according to instructions. Unfortunately he had only taken condensed milk and though not frequently ill, his resistance therefore has been much modified.

Temperature, maximum, 100° to 101°; minimum, 98° to 99°. Pulse, maximum, 140 to 150; minimum, 90 to 100. Respiration, maximum, 50 to 60; minimum, 25 to 30.

This case presents no difficulty in assuring one of the outcome. He never seemed to be very ill and recovery appears assured.

Case No. 23.—Born of French parents, Ellen B., two months of age, was admitted to the B. F. H. August 9, 1914. Unfortunately she has never had breast milk, for since birth she has received malted milk and the mother has continued its usage.

Present Illness. For two days past she had spells of vomiting, each one being accompanied by a dejection. Her stools have displayed in part the signs of dysentery of a low grade form.

Temperature, maximum, 100° to 101°; minimum, 97° to 98°.

Pulse, maximum, 130 to 140; minimum, 90 to 100. Respiration, maximum 40 to 45; minimum, 25 to 30.

Ellen was prostrated upon admittance and for a number of days her recovery seemed doubtful. However, after she had been with us for one week, her temperature hovered around normal and with one exception has remained so until now. A severe toxemia seemed to be wanting for she has lost but little in weight.

Case No. 24.—Carry A., six months old, of Italian parentage, was admitted August 7, 1914. Her past history is very indefinite from the fact that her parents cannot speak English and the few notes obtained were through an interpreter. She had been sick ten days. Dietetic treatment has been a varied one, consisting of breast milk and soft diet during early life.

Present Illness. Her present condition was inaugurated by vomiting, fever and dysentery some ten days ago. The frequency of vomiting had relation to being twenty-five minutees after the intake of each feeding. The dejections though few in number, have contained curds, mucus; but no blood or pus have been noted.

Temperature, maximum, 101° to 102°; minimum, 98° to 99°. Pulse, maximum, 150 to 160; minimum, 80 to 90. Respiration, maximum, 50 to 60; minimum, 25 to 30.

This case presents but one interesting feature and that is the irregularity of the respiration. In this respect alone her condition has been doubtful as to the final outcome. On the other hand, she has never had a really marked reaction and perhaps this interesting fact is due to a complication. Her recovery seems sure.

Case No. 25.—John S. is of English-American parents and is thirteen months of age. He was admitted to the hospital August 19, 1914, and has never been breast fed but raised entirely on modified milk and condensed milk, occasionally having barley water with lactose solution in combination; recently crackers, eggs, etc., have been added to his diet.

Present Illness. Sickness dates back two days, having a mild expression of dysentery.

Temperature, maximum, 99° to 100°; minimum, 96° to 97°. Pulse, maximum, 130 to 140; minimum, 90 to 100. Respiration, maximum, 40 to 45; minimum, 25 to 30.

John S. gave us some cause for worry, for the evidence of a subnormal temperature was rather unfavorable. This condition always indicates a very poor chance for the individual, for it either means a lack of resistance, or a lowered vitality, caused by a lengthy previous illness. It is hoped, however, that he might react, although his chances are unfavorable.

IV—CLINICAL MANIFESTATIONS.

A—AGE.

The limits as obtained from the charts are as follows:—

Group No. 1—Flexner—1 case 6 months; 2 cases 7 months;

1 case 8 months; 1 case 8½ months; 3 cases 10 months; 1 case 11 months; 1 case 16 months; 2 cases 18 months; 1 case 19 months; 2 cases 21 months; 1 case 51 months.

Group No. 2—Welchii—1 case 5 months; 1 case 6 months; 1 case 8 months; 1 case 12 months; 1 case 17 months.

Group No. 3—Mixed—1 case 2 months; 1 case 6 months; 1 case 7 months; 1 case 13 months.

Total Number of Cases—1 case 2 months; 1 case 5 months; 3 cases 6 months; 3 cases 7 months; 2 cases 8 months; 1 case 8½ months; 3 cases 10 months; 1 case 11 months; 1 case 12 months; 1 case 13 months; 1 case 16 months; 1 case 17 months; 2 cases 18 months; 1 case 19 months; 2 cases 21 months; 1 case 51 months.

All cases considered were under four and one-half years of age, the limits being two months on one hand and fifty-one months on the other. Sixteen cases (64%) were under one year. Eight cases, (34%) between one and two years. One case (2%) over four years. Under six months two recovered and two died. Between six months and twelve months four recovered and eight died. Under twelve months six recovered and ten died. Between twelve and eighteen months, two recovered and none died. Between eighteen and twenty-four months, five survived and one departed. Between one and two years, one recovered and one died, therefore under six months of age the percentage for recovery and death were the same, namely, 50%. Between six and twelve months, 33% recovered and 66% died. Under one year, 27½% recovered and 62½% died. Between twelve and eighteen months, all recovered. From eighteen to twenty-four months, 83% recovered and 17% died. In the interval between twelve and twenty-four months, 87% recovered and 13% died. So we see the greatest death rate occurs under one year of age, particularly so between six and twelve months. On the whole, there were ten (84%) out of the total of twelve deaths in the series which died under twelve months of age. The total white count in children of one year and over averaged from six hundred to one thousand higher than in the cases under one year of age.

B—SEX.

Group No. 1, male 10; female 6. *Group No.* 2, male 2; female 3. *Group No.* 3, male 2; female 2.

Total Number of Cases—Male 14; female 11.

One observes several facts relative to sex. Some unimportant, others seemingly important. In this series, fourteen were male and eleven were female; of the fourteen, seven or 50% recovered and seven or 50% died; of the female, eleven in number, six or 55% recovered and five or 45% died. However, unknown complications might have caused the somewhat greater percentage in the case with the boys, for in studying the fever charts of the girls, there were only three cases that had temperature of 101°, one 102° and one 105°. In other words, five or 45% out of eleven cases. In the case of the boys, two had 101°, two had 102°, one had 103°, three had 104°, one had 205°, or nine (65%) out of 14 cases had high temperature. It appears, therefore, that there is some significant factor in this regard.

	Male		Female	
	Recovered	Died	Recovered	Died
Flexner	6	4	2	4
Welchii	0	2	2	1
Mixed	1	1	2	0
Total	7	7	6	5

TOTAL

	Recovered	Died
Male	7	7
Female	6	5
Total	13	12

C—NATIONALITIES.

Group No. 1—Italian, 5; Irish-American, 5; American, 6.

Group No. 2—Italian, 1; Irish-American, 3; Slavonian, 1.

Group No. 3—American, 2; Italian, 1; French 1.

Total: Irish-American, 8; American, 8; Italian, 7; Slavonian, 1; French, 1.

It occurred to me that perhaps the previous environments in these cases might in some way have influences on the final outcome. In consideration thereof, the Italian children on the one hand have been contrasted with the American and Irish-American on the other hand. Unfortunately there were only two children of other nationalities, so when making comparison, these cases will be omitted. Peculiarly enough, the Italian children all

came from the slums in the vicinity of Battery Street, dark, poorly ventilated, dirty congested homes; in fact, one might picture a typical tenement home as described by social workers. The other children, as a rule, lived in localities where environments were superior in every respect. Despite these facts, more of the Italian children recovered in proportion than did the children of the other group. Of the seven cases of the former, five recovered and two died; of the latter, seven recovered and nine died. Thence the question:—Does environment play a role in these cases?

D—PREVIOUS FOOD.

Group No. 1—Case	Age	Breast Fed	Modified Milk	Condensed Milk	Cereals	Soft Food	House Diet	Proprietary Food
1	7 Mos.	Since birth						
2	10 "	1 week	6¾ mos.					
3	10 "	1 week	6¾ mos.					
4	8 "	1½ Mos.	6½ mos.			+		
5	18 "	10 Mos.	8 mos.					
6	21 "	15 Mos.	6 mos.			+		
7	19 "	3 Mos.			+			+
8	7 "	Since birth						
9	21 "	Questionable				+		
10	10 "		+	+ (10 mo.)				
11	16 "	Questionable				Eggs since birth		
12	8½ "		Since birth					
13	11 "	10 Mos.		+		Crackers		
14	51 "	Questionable	+			+		+
15	18 "	Since birth				Since 6 mos. bananas, etc.		
16	6 "	5 weeks					Since 4 mos.	
Group No. 2—								
17	17 "	7 Mos.						
18	5 "	5 Mos.						
19	8 "	1 Mo.						+
20	12 "	2 Mos.	+					
21	6 "	Since birth	Since birth					
Group No. 3—								
22	7 "	1 week		+				
23	2 "		Since birth					
24	6 "	Questionable	+					
25	13 "			Since birth				

D—PREVIOUS FOOD.

	No. Cases	Cases in %	Death %
Breast Fed Alone	5	20	16
Breast Fed + Modified Milk	6	24	20
Breast Fed + Condensed Milk	2	8	0
Breast Fed + Proprietary Food	3	12	4
Breast Fed + House Diet	4	4	0
Modified Milk Alone	2	8	0
Modified Milk + Condensed Milk	1	4	4
Condensed Milk Alone	1	4	4
Questionable Diet	4	16	0

The inferences drawn from the above data are indeed singular and interesting. Just the reverse of what we should have naturally expected happened. The children who had taken breast milk alone, prior to entrance, did not display the resistance anticipated, for four out of five died. Those who had taken both the breast milk and a modified milk had a similar ending. Five out of the six cases did not rally and finally succumbed. Those who received breast milk and proprietary compounds faired somewhat better, and strange enough, the child who was allowed indiscretions of the house diet in connection with the breast milk did not die. Therefore, to summarize, 83% or 10 cases which had received breast milk alone, or with other foods, died. Of the eight cases who were taking different diets, questionable ones at that, only 17% or 2 cases died.

The question which now confronts us is whether the source of infection is other from what we have thought in the past, namely, from previous food, particularly milk? The writer, while acknowledging milk is perhaps the one food which causes the greatest number of infections to be transmitted to infants, still he feels that there is a contagion which has been previously omitted by others than of the Boston School. Right here, it might be well to mention that precautions analagous to those of typhoid are practiced by pediatricians in this locality. Further work on this subject will be discussed at length by the bacteriologist of the Boston Floating Hospital, who is now in preparation of a very interesting paper on this subject.

E—DURATION OF ILLNESS.

Duration of Illness Prior to Admission.		Duration of Illness After Admission.	
Cases	Days	Cases	Days
Group 1.		**Group 1.**	
1	1	2	2
1	2½	2	2
4	3	1	7
1	4	1	11
1	6	4	13
3	7	3	14
1	8	1	16
1	13	1	20
3	14	1	21
		1	30
Group 2.		**Group 2.**	
2	3	1	6
1	7	1	10
2	14	1	11
		1	12
		1	21
Group 3.		**Group 3.**	
1	7	1	10
1	10	1	20
1	14	2	21
1	21		
Total.		**Total.**	
1	1	2	2
1	2½	2	2
6	3	1	6
1	4	1	7
1	6	2	10
5	7	2	11
1	8	1	12
1	10	4	13
1	13	3	14
6	14	1	16
1	21	2	20
		4	21
		1	30

F—TOTAL DURATION OF ILLNESS.

Group No. 1			
Case	Duration	Total	
1	1 day		
2	14 days	Cases	Duration
2	16 "	1	11 days
1	17 "	1	13 "
1	18 "	2	14 "
2	20 "	2	16 "
1	21 "	2	17 "
2	23 "	2	18 "
1	26 "	3	20 "
1	29 "	1	21 "
1	44 "	2	23 "
Group No. 2		2	26 "
1	13 "	1	29 "
1	18 "	1	30 "
1	20 "	1	35 "
1	26 "	1	42 "
1	45 "	1	44 "
Group No. 3		1	45 "
1	17 "	Average	23 days
1	30 "		
1	35 "	Case No. 5 omitted.	
1	42 "		

Of the number that died, 77% succumbed under twenty days, and the remaining 23% died between twenty-one and twenty-six days. Of those that recovered, 27% were sick under twenty days, 28% between twenty-one and thirty days, 18% between thirty and forty days and 28% between forty and fifty days.

Conclusions—Most cases that live twenty days or over with this infection, recover. Rarely so under twenty days. Those cases that died, the demise occurred before twenty days and a few cases extended to a twenty-six-day duration.

F—Facies—The picture which children suffering from this ailment present is indeed typical. A drawn expression, a stary look, sunken eyes, a clear and shiny sclera, combined with a pallor contrasted with ruby red lips, gives you the picture as was seen by me in a great number of the cases.

G—VOMITING.

Vomiting is indeed one of the main symptoms accompanying Infectious Diarrhea. As a rule it, in combination with the diar-

rhea, features the initial symptoms. For the most part the projectile type is wanting. However, two cases in this series gave a history of said type. The vomiting was present in twenty-one out of the twenty-five cases. It may occur immediately after the intake of food, or at periods varying from fifteen minutes to one hour thereafter. The quantity vomited is usually proportional to the intensity of the attack, viz:—the more toxic the infection the greater will be the periods of vomiting. In the majority of cases, the food is not retained for any length of time and the quantity taken in and given up have a direct relation to one another. The color of the vomitus is sometimes tinged with green, due to presence of bile, but as a rule is generally colorless, curdy in consistency, acrid in effect, having an odor varying from an acid-like character to one with no evidence at all.

H—DIARRHEA.

Dejections.—The dejections do not show any one manifestation that would be pathognomonic for any particular infection. Sometimes in the diarrhea of those children affected with the *Bacilli Welchii* this type might display a sort of puffed appearance, and by passing a level plane over this mass, one might note the peculiar feeling. The color as a rule varies from a reddish green, on one hand, to a brownish green on the other hand, depending, of course, on the amount of blood present and the part of the intestines from which the blood oozes. As a rule the stool is green, unless previous modifications of bismuth-salts have been given; this, of course, would modify the color. The size is proportional to the number in twenty-four hours, and inasmuch as there are numerous dejections, the individual passage will be small. The reaction is always acid except if the dietetic factor at the start should be protein, then the reaction would be alkaline, or slightly acid. The dejections are irregularly formed, showing undigested food and other pathological manifestations. Before entrance the maximum number of stools were twenty-five, the minimum one; after entrance, the maximum ten, the minimum none. Before entrance two cases had fifteen plus dejections, sixteen had ten plus and seven had five plus. Of the five plus cases, three of them died. After admission two cases had ten plus, twenty had five plus and three

had five plus. These, of course, refer to the number in twenty-four hours. The average number of dejections before admission were nine, and after admittance were four. The conclusions drawn are that an Infectious Diarrhea which is not attended with a great number of stools at the start as a rule will prove fatal in the majority of cases. On the other hand, dejections numbering from fifteen to twenty-five responded better to treatment and recovered in the great majority of cases. Blood, pus and mucus are a a rule associated with a stool of Infectious Diarrhea.

Dejections: Blood alone, 0; blood with mucus, 10; blood with pus, 0; blood with mucus and pus, 10; pus alone, 0; pus with mucus, 2; pus with blood, 0; pus with blood and mucus, 10; mucus alone, 3; mucus with blood, 10; mucus with pus, 2; mucus with pus and blood, 10.

Summary: Blood, 80%; blood and mucus, 40%; blood with mucus and pus, 40%; pus, 48%; pus with mucus, 8%; pus with mucus and blood, 40%; mucus, 100%; mucus alone, 12%; mucus with blood, 40%; mucus with pus, 8%; mucus with pus and blood, 40%.

I—WEIGHT AND EMACIATION.

Weight.—The weights were recorded in eighteen out of twenty-five cases. The greatest loss in one day was one pound and seven ounces; in two days, two pounds and six ounces; in all, ten cases showed a loss, seven a gain and one remained stationary. These weights, of course, refer to the first weight at entrance, and to the last weight when they are discharged. Of those that gained in weight the limits were from two and one-half to forty-eight ounces; the average gain being thirteen ounces. Strange enough to record, three of those that gained finally succumbed to the illness. Those in which there were a decrease in weight, the limits were one to twenty ounces, the average loss being eleven ounces, six recovered and four died.

Emaciation.—This idea is best expressed by the great loss in weight and of the severe grade of anemia that these little children are subjected to. In other words, there is perhaps no other one condition in which there is such a pronounced emaciation in a given duration of time.

J—NEUROLOGICAL FINDINGS.

The most marked symptoms within this group are extreme restlessness, twitchings (severity controlled by toxicity of infection) and loss of reflexes. Their sense of feeling is greatly reduced, whether this being due to the state of coma to which these severe cases aspire, or on the other hand due to some inhibition of the peripheral nerve endings, is indeed a conclusion hard to make.

K—TEMPERATURE.

The temperature curve in Infectious Diarrhea is indeed a variable one.

First Week of Illness—The temperature ascends gradually, reaching as a rule the maximum by the 5-7th day, although occasionally the maximum will not be reached before the beginning of the second week, with a morning remission and an evening rise during the entire fever period.

Second Week of Illness—The maximum temperature reached is usually from one to one and one-half degrees, less than that of the first week.

Third Week of Illness—Temperature rarely exceeds on hundred degrees and most often records in the neighborhood of ninety-nine plus.

Fourth Week of Illness—The greater part, the patient is free from fever, occasionally a slight rise not exceeding ninety-nine and one-half may be recorded for one day. This is due to some indiscretion which is not to be considered a part of the real curve.

The maximum temperature of one hundred and three degrees plus, means the prophecy of death. In other cases where we have an initial temperature of one hundred and five degrees plus and this is followed by a fall of two to three degrees, such cases, for the most part, terminate fatally anyway. In trying to determine whether there was any direct relation between the temperature and the pulse as contrasted in typhoid fever, the following are the conclusions obtained:—

Group No. 1—(Example) Age ten months, temperature one hundred and four and one-half degrees, pulse one hundred and twenty. If the pulse be taken when the child is crying, and this is the case in the majority of instances, of course the rate will be much greater; but on the other hand, if it is taken when

the child is at rest, as a rule you will get a high temperature and a low pulse, very similar to that of typhoid.

Group No. 2—The conclusions obtained from this group vary markedly to that of the former (Example) Age seven months, temperature one hundred degrees, pulse one hundred and fifty. This typifies a peculiar combination, namely, a rather low temperature and a greatly accelerated pulse.

Group No. 3—The cases under this group simulate those accorded under the previous one, with the exception that the pulse is more greatly accelerated, particularly if the mixed infection contained both the *Bacilli Welchii* and Streptococci.

Fever is one of the symptoms on which we can base a certain amount of prognostication. The limits were 100° to 106+°. All cases which had a temperature of 104+° died and a few of those that had 102+° succumbed.

DURATION—HOSPITAL

No. of cases	Number of days with fever	Percent cases	Percent died
1	20	4	0
1	19	4	0
1	17	4	0
1	15	4	0
4	14	16	8
2	13	8	0
1	12	4	4
2	11	8	8
1	10	4	0
1	9	4	4
1	8	4	0
4	6	16	16
1	5	4	0
1	4	4	4
1	3	4	0
1	2	4	4
1	1	4	4
Summary—			
1	20	4	0
3	15	12	0
10	10	40	5
7	5	28	4
4	1	16	3

Each patient averaged ten days of fever while in hospital.

No. of Cases	Percent of time in hospital
9	100
2	90
2	80
1	70
5	60
2	50
2	40
0	30
1	20
1	10

Summary

No. of Cases	Pct. of time in hospital	No. died
14	70	9
7	50	3
2	30	0
2	10	0

No. of cases	Temperature	Percent of total number	Percnt died
1	106°+	4	4
2	105°+	8	8
4	104°+	16	16
2	103°+	8	4
6	102°+	24	12
7	101°+	28	0
3	100°+	12	4
Summary—			
7	104°+	28	28
8	102°+	32	16
10	100°+	40	4

L—RESPIRATION.

The respiration cannot be considered a suitable guide for the prognosis of recovery in the individual case. In the severe toxic cases, when there is an increase and also where there is an irregularity, these cases as a rule have a fatal termination.

No. of cases	Respiration	% of cases	% died
1	120+	4	4
2	70+	8	4
8	60+	32	16
3	50+	12	4
6	45+	24	12
4	40+	16	8
1	30+	4	0
Summary—			
	70+	12	8
	50+	44	16
	30+	44	24

M—PULSE.

M—Pulse.—The pulse varied in rate from 190+ to 120+ per minute. The rhythm simulates regularity excepting just prior to death, when then become thready and irregular. The arteries are very easily compressed and the size and shape of the pulse wave very small. The tension as a rule being fair.

No. of cases	Rate	Percent of total cases	Percent died
1	190+	4	4
1	180+	4	4
3	170+	12	8
3	160+	12	4
7	150+	28	8
5	140+	20	16
4	130+	16	4
1	120+	4	0
Summary—			
	170+	20	16
	150+	40	12
	120+	40	20

Greatest 140-150.

V—CLASSIFICATION.

After a careful survey of the cases in question, the writer has endeavored to classify them from a bacteriological basis.* Remember this refers only to those which have been seen in person.

Infectious Diarrhea
- 1—Toxic
  - (A) Flexner
    - (a) Severe
    - (b) Moderate
    - (c) Mild
- 2—Non-Toxic
  - (B) Welchii
    - (a) Severe
    - (b) Moderate
    - (c) Mild
  - (C) Mixed

(A) *Severe*—Marked prostration, coma, great loss in weight, ruby lips, temperature 103°—, persisting, dejections ten to twenty-five daily on the one hand or two to four on the other hand and unable to retain by mouth any food whatsoever.

(B) *Moderate*—The above symptoms slightly less severe, with a temperature of not over 103° and a remitting one. Few dejections in this type is a rare case.

*From a bacteriological standpoint as exhibited August, 1914.

(C) *Mild*—No coma, slight prostration, weight remains about same, no apparent neurological symptoms, no perceptible loss of interest in surroundings, environments and temperature rarely reaching 101.

(B and C) (a). The symptoms in this division resemble the other severe cases in the toxic group in every respect excepting as follows:—The coma is not as a rule as well marked and prostration does not seem to be at all proportional to the temperature and infection. The amount of fever is generally higher, practically in the mixed infection where the *Bacilli Welchii* is one of the organisms.

(b) *Moderate Cases*—These differ from the severe cases only in regard to the temperature being lower, with slight prostration and the omission of any nervous symptom.

(c) *Mild Cases*—This sub-division represents a very peculiar collection of facts. The child appears to be slightly under the weather; is, however, interested in the surroundings, and if old enough will talk, sit up in bed and do many things respective of age. Diarrhea is a constant symptom, though the loss in weight is not as great as the number of dejections would lead one to believe. The bacterial manifestation is present and one finds them in almost every examination of the stool. They have practically no abnormalities with respect to temperature, pulse or respiration; in other words, if it were not for the diarrhea, you could hardly consider the child ill. It, however, might be the forerunner of the other two types.

Cases		R.	D.	
Toxic	Severe Nos. 2D*, 3D, 4D, 10D, 16 D	0	5	
	Moderate Nos. 11R, 14R, 2D, 5R, 6D, 7R, 8D	4	3	
	Mild Nos. 9R, 12R, 13R, 15R	4	0	8-8
				0
Non-Toxic	Severe Nos. 20D, 21D	0	2	
	Moderate Nos. 22R, 19R	2	0	
	Mild Nos 25D, 17R, 18c, 23R, 24R	3	2	
				5- 4
				13-12

*D-Dead R-Recover.

It would seem therefore that all the severe types died; the chances are in favor of the moderate cases and recovery is practically always assured in the mild cases.

VI—MORTALITY.

Mortality in these series is perhaps greater than one would expect to find. Of the twenty-five cases, thirteen recovered and twelve died. Of the number that died, more than half of the children were brought to the hospital after they had been sick for a period of time varying from one to four weeks in duration. It must also be noted that the past has proven that the greatest number of deaths among those having Infectious Diarrhea occurred in the month of August. A detailed account with reference to age is discussed at length in a previous paragraph.

VII—RELATION—TEMPERATURE, FOOD AND BACTERIA.

Clinicians of to-day agree that there is an intimate relation between temperature, food and bacteria as the etiological factors in infectious diarrhea. Some believe that previous illness with lowered resistance, plus indiscretion of diet, act as predisposing causes and bacteria act as the exciting cause. This deduction to me seems to be the most logical. The question concerning previous food, and particularly with reference to milk, is indeed an important one. Considering the facts that children who have had breast milk alone, or breast milk in the greater part during the first year of life, have died in a greater number of cases than those having had previously a diet of different other foods, the question arises as to the manner in which the child receives infection for we are forced to acknowledge that the infection is contracted in more than one way. It appears, therefore, the probability of contagion of infectious diarrhea with particular attention to that form caused by *Bacillus dysenterii* Flexner is almost analagous to the contagion Enteric fever.

VIII—SUMMARY.*

1. *Bacilli dysenterii* Flexner was the organism found in the majority of cases during the past summer of 1914, aboard the Boston Floating Hospital, *Bacilli welchii, Streptococci, Bacilli typhoid* and *paratyphoid* were also found.

2. Age—Sixteen out of twenty-five cases were under one

*A complete summary may be found under each topic previously discussed.

year of age, eight cases between one and two years and only one over twenty-four months. The younger the child the more grave is the prognosis, for under one year 62½% died and 37½% recovered. Ten out of the total of twelve deaths were recorded under twelve months of age.

3. Sex—There was slight predominance of the male over the female, being fourteen of the former and eleven of the latter.

4. Nationalities—The resistance of the Italian children is superior to the other nationalities affected. The children of the Irish-American, American and Italian parentage were the ones forming the large group who had infectious diarrhea.

5. Previous Food—Ten of the twelve children who died were those who had been previously fed on breast milk alone or in combination.

6. Duration of Illness—The average illness lasted twenty-three days. Most cases that lived twenty days or over, recovered; rarely so under twenty days. Those cases that died, the demise occurred as a rule before twenty days.

7. Facies—All cases in which one could note ruby red lips, contrasted with the anemia, proved fatal.

8. Vomiting—The vomiting was present in twenty-one out of twenty-five cases.

9. Diarrhea—Blood was seen in 80% of the cases, pus in 48% of the cases and mucus was noted in all the cases.

10. Weight—Of eighteen cases where the weights were recorded, the greatest loss in one day was one pound and seven ounces; in two days, was two pounds and six ounces.

11. Temperature—Each patient averaged ten days of fever while in the hospital. The limit of maximum temperatures lay between 106° and 100°. All cases that had a temperature of 104 degrees plus, died.

12. Respiration—The maximum respiration varied from thirty to seventy per minute and all cases that did not recover had a respiration of thirty plus.

13. Pulse—The pulse varied from 120 plus to 190 plus per minute. The rate of 160 plus generally an omen of an unfavorable outcome.*

*Pulse—A noticeable fact is the consideration of a slow pulse with a high temperature in the cases caused by the **Bacillus dysenterii** Flexner.

14. Classifications—The toxic cases were principally those caused by *Bacilli dysenterii*-Flexner; the non-toxic cases were those in which the etiological factor was *Bacilli welchii* and mixed infection. On this basis, temporary classifications are made.

15. Review—Hematology (Infectious Diarrhea)—There are no authentic data up to the present time on this important subject that the writer has been able to gather.†

16. Total Leucocytic Counts—With a fall of the temperature, there was a corresponding rise in the average total white count of each week. Cases of Group No. 1—Flexner manifest a leucopenia throughout the illness. Those of Group 2, Welch, show a leucocytosis, and those of Group 3—Mixed, a marked leucocytosis.

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†An original contribution by the writer on The Hematology of Infectious diarrhea is now being published by the Boston Floating Hospital.

AN UNUSUAL INJURY OF THE PENIS WITH SUCCESSFUL REPAIR.*

By PAUL J. GELPI, A. M., M. D.,
Assistant Professor of Genito-Urinary Diseases, Graduate School of Medicine, Tulane University; Visiting Surgeon Charity Hospital, New Orleans.

On the 28th of December, 1914, a colored boy, Alfred G., age 9, was admitted to W. 1, Charity Hospital, presenting a condition of unusual interest. His penis, at a point about half an inch in front of the pubis, was almost completely severed, just as though it had been done by a knife in a circular amputation of the organ. The skin was cut through all around, the cavernous bodies were almost completely divided (Diagram 1), and, below, the spongy body including the urethra was severed (Diagram 2). The dorsal vessels and those of the spongy body, as well as the central arteries of the cavernous bodies, were cut, and it looked as though the distal portion was hanging by a mere thread. The uncut segment of the penis measured less than three-eights of an inch across and less than a quarter of an inch in thickness. Edema of the pendulous part with phimosis was present to a marked degree, denoting to what extent the circulation was impaired.

We thought at first that it would be a useless task to attempt restoration, in view of the great impairment to the circulation. The impression among those who viewed the case was that nothing short of completing the amputation would avail. We leaned on the side of conservatism, and decided to try repair by gradual stages, with the result shown in the accompanying photographs.

The history of the case can be told in a few words. We quote from the history written by Dr. Dean, intern of our service:

"About 8 days before entering the hospital, patient was out playing with some other boys. One of his playmates tied a string around his penis. He forgot about it for the time being, and when he went home his penis was so swollen that he could not get it off. The child being afraid to tell his mother, the string remained around his penis for 8 days. He could pass his urine at first with difficulty only."

The boy gave me an entirely different version. He claimed to be subject to nocturnal incontinence. His father, not under-

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standing the nature of the condition, threatened to hang him if he would again wet the bed. In mortal dread, he decided to tie a string around his penis so as to avoid another accident and escape punishment. I mention this simply to show the difficulty in getting correct details. It would be interesting to know how long it took for the string to cut through the deep tissues, and also to ascertain the amount of hemorrhage and the time it took for the urethral fistula to form. Unfortunately such details could not be furnished by the boy, and it was only by persistent questioning that we were able to secure the meager information mentioned above.

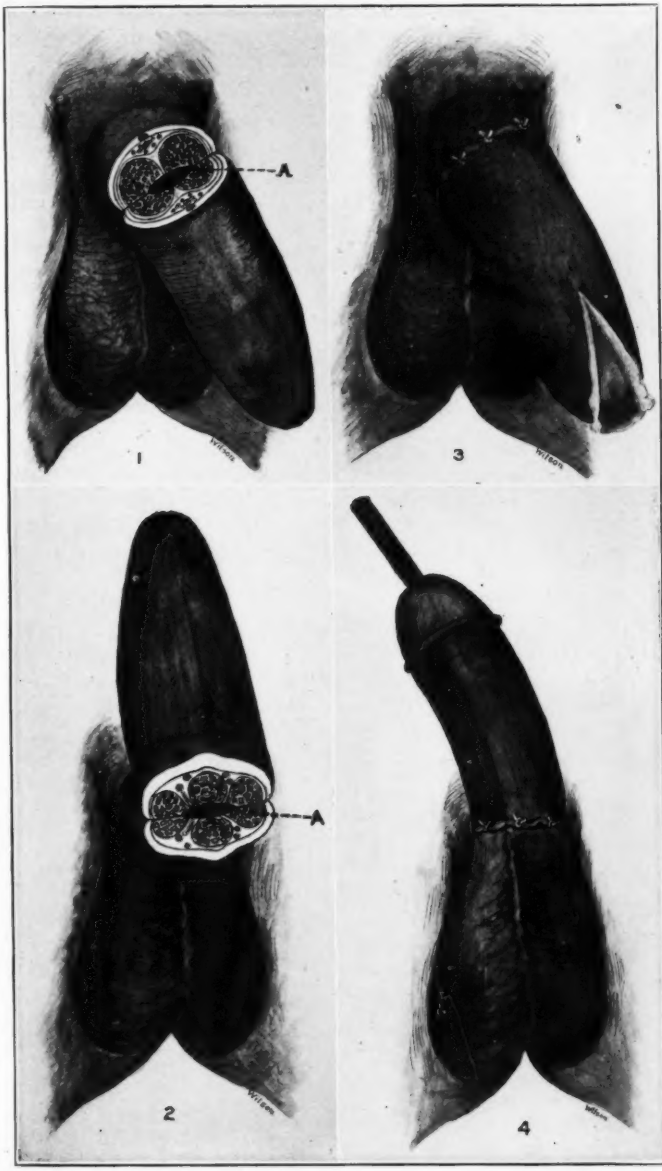
Oprative Procedures: December 29 a dorsal slit was made to relieve edema of the prepuce. This was done under local analgesia (novocain).

January 2, 1915. Partial penoraphy under local. Three catgut sutures passing through the skin and deeply through the cavernous bodies were placed so as to unite the dorsum. The result was fairly good and we were encouraged to proceed with the work.

January 19. Circumcision and urethroraphy, also penoraphy completed. The urethra was sutured over a catheter passed through the penis into the bladder. Sutures were placed to unite the spongy body and the portions of the cavernous bodies that were still separated. This gave promise of good union until the fourth day, when the patient pulled out the catheter. This caused the urethra and part of the spongy body to remain ununited. General anesthesia was used.

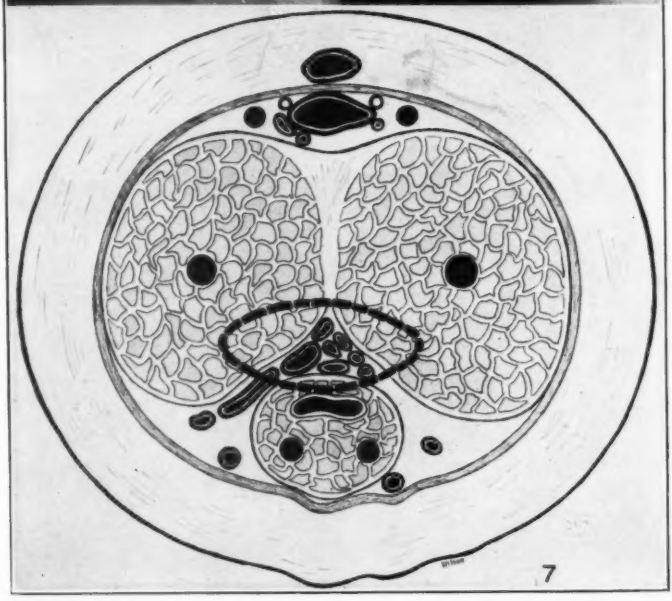
February 5. External urethrotomy and urethroraphy under ether anesthesia. In order to absolutely divert the urinary stream, we resorted to urethrotomy. Perineal drainage was established and the urethra was sutured over a second catheter passing through the penis and out through the perineal incision. The skin was sutured directly over this. We were again doomed to disappointment, for the occurrence of stitch abscesses prevented the union of the urethra.

February 24. External urethrotomy and urethroraphy under general anesthetic. Perineal drainage was established as before and the spongy body and urethra sutured. A piece of skin one-third of an inch was cut away from the distal side. The skin



1. Diagram showing section of cavernous bodies and dorsal vessels. A—uncut segment.
2. Section of spongy body and urethra. A—uncut segment.

Illustrating Paper of DR. P. J. GELPI.



5. Photo showing result of operation, anterior aspect.
6. Photo showing result of operation, posterior aspect.
7. Diagram of cross section of penis. Dotted line encircles only existing vascular supply at time of admission.

on the proximal side was dissected for a half inch, including a portion of the scrotum, and freshened. This was sutured to the new edge of skin above, so that the superficial line of sutures was on a higher level than the deeper one. A few days later, union was perfect except at one point on the right side where a pin-hole opening remained, through which the urine passed drop by drop. A catheter was introduced directly into the bladder and in a few days the perineal incision and the penile fistula were entirely healed.

This case demonstrates what perseverance will accomplish in plastic work. It shows also how we can restore parts even when the circulation has been impaired almost beyond hope. There are two points, however, which only the future can determine. One is whether erection will be perfect in the course of time and insure normal coitus; the other whether there will be stricture formation at the point where the urethra was brought together.

DISCUSSION OF DR. GELPI'S PAPER.

Dr. H. W. E. Walther: The two cases Dr. Gelpi has presented tonight are of particular interest to the genito-urinary surgeon. The method he employed in removing the giant calculus from the bladder, namely, by means of a hammer and chisel, I consider the most rational. The conservatism he practiced in the case of plastic operation upon the penis for an almost total traumatic amputation is also commendable. However as to the end result in this latter case, I do not think that the patient will ever experience complete erections in the distal portion of the penis, due to the deficient vascular and nerve supply to this part.

Dr. E. D. Martin: This case as reported by Dr. Gelpi is rather remarkable. I consider myself fortunate in having seen it, for one might think from the report that Dr. Gelpi had exaggerated the condition of the boy on admission to the hospital, but this would be almost impossible. The diagram shows quite clearly and quite accurately the true condition. But what is more, Dr. Gelpi not only preserved the penis, but later reestablished the continuity of the urethra, and in doing this adhered to a well recognized rule which I want to particularly emphasize here, and that is to cover over the point of union in the urethra as deeply as possible, and when possible to have the line of suture in the urethra as far as possible from the line in the skin flap. In the event, then, of a fistula it will close by granulation. To insure this result I now make it a practice in cases of hypospadias where the urethra has to be lengthened to bury the point of union well under the tissue. This is done by carrying

out the suggestion of Beck, by dissecting out the normal urethra for half an inch or more, and tunnelling well beyond the junction of the newly formed urethra; the catheter with the urethra attached is then drawn through the tunnel. This not only insures deep implantation of the new urethra but covers it entirely with vascular tissue; the skin is then closed over the raw surface. With this procedure I find that the entire operaion can be done in one or two operations, whereas formerly I have made as many as twenty attempts to close fistulæ. I am very glad Dr. Gelpi carried out this procedure and that he realizes its advantages.

Dr. Gelpi (in closing): In answer to Dr. Genella, I believe that had the case been treated immediately after the injury, repair would have been easier.

In answer to Dr. Walther, I am of the opinion that the chances for erection will depend on the condition of the circulation. From my experience with cases of partial amputation of the penis for epithelioma, I feel certain that there will be a possibility of coitus, for I have been assured by some of these patients that they were able to have pleasurable intercourse. The only question in doubt is whether erection will be perfect and coitus normal.

In answer to Dr. Martin, I do not know what became of the string that constricted the penis, as I only saw the case the day after admission to the hospital. I fully agree with him as to the best method of repairing the urethra. The urethral sutures and the skin sutures must be placed on a different level to prevent infection.

THE CLINICAL INTERPRETATION OF THE SERUM TESTS FOR TYPHOID AND FOR SYPHILIS.*

By S. CHAILÉ JAMISON, M. D., New Orleans.

I.

THE CLINICAL INTERPRETATION OF THE SERUM TESTS FOR TYPHOID.

There are two serum tests largely used for the diagnosis of typhoid fever—the Bass-Watkins macroscopical reaction and the Widal microscopical reaction. These reactions demonstrate merely the presence or absence of agglutinins for typhoid bacilli. The presence of agglutinins in the serum means that the patient either has or has had typhoid bacilli active in the body, and, of course, this activity usually results in the clinical condition known as typhoid fever; but typhoid bacilli may cause periostitis,

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parotitis, pyelitis or cholecystitis, in the latter case without the patient having had typhoid fever, and agglutinins thus may be caused to appear in the blood. At the present day the agglutinins for typhoid bacilli may be in the serum without the patient ever having had any disease due to typhoid bacilli, these agglutinins being produced by prophylactic typhoid vaccination.

A study of many hundreds of agglutination reactions performed in the senior laboratory of clinical microscopy at Tulane, during the past five years, leads me to believe that the agglutination reaction is usually distinctly positive some time between the 12th and 15th day of the disease; the Bass-Watkins becomes positive about two days later than the Widal, in my experience.

Park[1] gives the following figures:—

"About 20 per cent of typhoid infections give positive reactions in the first week; about 60 per cent in the second week; about 90 per cent in the fourth week, and about 75 per cent in the second month of the disease."

Certain patients may recover from typhoid fever without having developed agglutination reactions until convalescence, or may die from typhoid infection without ever having a positive reaction.

Although agglutinins play a minor role in immunity, there is good reason to believe that they are indicative of the other more important antibodies, and therefore may be of some importance in prognosis. The agglutination reactions last for weeks, months, or even years after an infection or vaccination; very rarely, however, for longer than about eighteen months. The absence of a positive reaction does not necessarily mean that a patient is not immune to typhoid infection.

General miliary tuberculosis, septicemia, and malignant endocarditis frequently affect the serum in such a way that it agglutinates typhoid bacilli. This is especially true of general miliary tuberculosis.

I believe that the following points are of especial importance in interpreting the reactions:

1. If a patient, at the first examination, has a negative Widal or Bass-Watkins, and subsequent examination reveals a positive reaction, this is conclusive evidence of an active typhoid infection.

2. The negative reaction does not mean that the patient has not typhoid fever; this is especially true if the examinations are made during the first two weeks of the disease (and this is the usual time for such examinations).

3. A positive reaction does not mean that the patient is suffering with an active typhoid infection.

4. "Faintly positive" and "doubtfully positive" reports are to be disregarded.

5. Agglutination occuring in dilutions of less than 1-100 should be disregarded; this is especially true when dried blood is used.

II.

THE CLINICAL INTERPRETATION OF THE SERUM TESTS FOR SYPHILIS.

There are two reactions generally used in the laboratories of New Orleans—the Wassermann and a modification of the Wassermann, erroneously called the Tschernogubow. Both of these reactions are tests for the presence of amboceptors against a lipoid substance produced by the activity of the *Treponema pallida* on certain tissues of the body.

A positive reaction is not to be expected in the first stage of syphilis. In the large majority of cases the reaction does not appear until about five days before the eruption on the skin; a positive Wassermann has appeared as early as five days after infection. Therefore a negative serum reaction means nothing in the first six weeks or two months of a syphilitic infection.

In all cases of untreated secondary syphilis the serum reactions should be positive. If the reactions are negative in a case supposed to be in the secondary stage, it is, in my opinion, the strongest single piece of evidence that the patient has not syphilis; and certainly, under such conditions, the diagnosis should be critically reviewed and the tests repeated several times. It is claimed that some slight treatment may bring out the serum reactions (the so-called provocative treatment); such cases have not occurred in my experience.

In tertiary syphilis the serum reactions are positive in only about 40% of cases. This is due, I believe, much more to the fact that these cases have had more or less thorough treatment than that the serum reactions tend to fade with the passage of

time. This view is borne out by the fact that the negro, who notoriously neglects treatment, gives a high per cent of positive reactions in the tertiary stage. Again, then, in this stage of syphilis a negative reaction has no significance, while a positive reaction is a strong link in the chain of evidence.

In tabes positive reactions occur in a little over 50% of the cases. In paresis the serum Wassermann should be positive in over 90% of cases. In cerebro-spinal syphilis we expect about 75% of cases to give positive serum reactions. In view of these figures, it is lucky that, so far as syphilis of the central nervous system is concerned, we have a far more accurate laboratory method, namely, the study of the cerebro-spinal fluid.

In congenital syphilis the Wassermann should always be positive, and as such a diagnosis is dependent principally on the serum reactions, this point is of importance.

I believe that a diagnosis of syphilis made on serum test alone, is open to very grave criticism; that the serum reactions are merely symptoms of syphilis, that are occasionally produced by other diseases and conditions.

Under the influence of treatment the serum reactions disappear according to the severity of the infection, the length of time of infection, and the energy with which the treatment is carried out. No case should be considered cured until the Wassermann or one of its modifications has been negative at six month intervals for two years.

DISCUSSION.

Dr. H. W. E. Walther: My experience with the Wassermann reaction has been very disappointing. In some instances I get a positive reaction report on one day and a week later I get a negative reaction report all on the same case, no treatment having been given in the interval. I think that we all must look upon the Wassermann merely as a link in the chain of diagnostic aids we now have for syphilis. There isn't a doubt but that the personal equation as to the man making the Wassermann must always be taken into consideration. A positive Wassermann certainly does not, in every instance, mean syphilis. Neither does a negative Wassermann mean that our patient hasn't syphilis. In my experience, in the out-patient genito-urinary service of Charity Hospital, I have found a marked variance in the reports of Wassermanns made. It is regrettable that we haven't a more accurate diagnosis for syphilis. I have almost abandoned the Luetin test in late syphilis because of its unreliability.

Dr. Paul J. Gelpi: I am particularly interested in the last part of Dr. Jamison's paper. I do not place so much reliance on the Wassermann test as I formerly did on account of the conflicting reports obtained. We frequently get a positive Wassermann and a negative Tschernogubow and vice versa. Now if, as we are told, the Tschernogubow is a more delicate test, why should we not have it positive when the Wassermann is so? I believe the Wassermann test of some value in determining the final cure. For instance, if a patient in the course of treatment has repeatedly given a positive Wassermann, and in the final test, after suspension of medication for 3 and 6 months, gives negative reactions, I consider it a definite cure. The Wassermann should only be entrusted to an experienced laboratory man.

Dr. J. A. Lanford: We should not forget that in both the Widal and Wassermann reactions we are looking for definite anti-bodies, the methods of demonstration being different. These anti-bodies are constantly being eliminated from the body in various ways and when they finally disappear from the blood stream we get a negative reaction. If there is a deep-seated focus of syphilitic infection and but few of the organisms are being killed off, stimulating the formation of anti-bodies in small amounts, these anti-bodies may be eliminated rather quickly, so that we may get a negative Wassermann following rather shortly after a positive one. Another fact to remember is that mercury will negative a positive Wassermann and alcohol taken internally in amounts of only 30 cc. will produce the same result. Therefor, it is no reflection on laboratory men or the Wassermann reaction when one finds at different times a positive or a negative reaction in the blood serum of the same patient.

The Wassermann reaction is a very valuable one and should be used in every case in which the diagnosis is at all obscure whether there is a history of syphilis or not. This is particularly important before surgical procedure. I recall two cases in which the testicle was removed and the lesion was afterwards found to be a gumma and a subsequent Wassermann reaction being positive. I also recall an unnecessary resection of intestine, the diagnosis before operation being malignancy.

I am rather inclined to believe that the Wassermann reaction is practically specific for syphilis as it has been our experience at the Touro Infirmary, where we have done between five and six thousand reactions during the past three years, that every blood serum giving a positive Wassermann reaction was from a patient suffering with some form of syphilis.

Dr. Randolph Lyons: I am very much interested in the paper read by Dr. Jamison, and agree with him that all the serum tests for typhoid and syphilis are subsidiary to clinical findings; however, an erroneous diagnosis is easily made in many cases, unless the dilu-

tion is as high as 1 to 50 in the Widal reaction. In my own work I use three dilutions, 1 to 10, 1 to 50 and 1 to 100. The value of the Widal is well brought out by Dr. Jamison. In my former work I found the blood culture and Widal responded in an inverse ratio in their results. The blood culture was most often positive early in the disease and the Widal later. In regard of the value of the serum test for syphilis, I have not been able to satisfy myself that the modified Wassermann reaction was more accurate than the original Wassermann. I have found the luetin test to be very valuable in some cases, especially so in cardio-renal cases, where the other tests for syphilis were negative. In view of the recent article of Sherrick, it will be necessary to review some of our positive reactions in order to discover whether they were taking iodine in any form.

INTESTINAL PARASITES IN SPANISH HONDURAS.*

By NATHAN BARLOW, M. D., Cuyamel, Honduras.

The inhabitants of the Central American countries are migratory in nature and pay little attention to political boundaries.

The natives of Honduras, Nicaragua, Salvador, and Guatemala were originally separated in the reports; but, as there was no appreciable difference in the percentages, they are combined in the statement below, which may be considered as fairly representative of this portion of the Caribbean coast.

METOZOA.

Method of Examinations—At least six coverglass preparations were examined in each case. Of the first one hundred cases, all those negative for hookworm were re-examined by Bass's centrifugal method, and were given thymol.

In only one were a few ova found, and in the same case two hookworms expelled after 75 grains of thymol. It therefore seems justifiable to assume the work to be accurate within 1%.

An additional check upon the presence of cestodes and flukes was afforded by examination of the movements after the administration of thymol, which usually removes at least a portion of any platyhelminths which are present.

The percentages were as follows:

*Read before the Seventh Pan-American Medical Congress, San Francisco, California, June 19, 1915.

	Natives 800 cases.	Negroes 100 cases.	Whites 100 cases
Free from parasites.....	5.5	3.	27.
One species only.....	38.5	47.	29.
Two or more species.....	56.	50.	44.
Hookworm (*see notes).....	79.25	54.	20.
Trichuris trichuria.....	49.	47.	38.
Ascaris lumbricoides.....	44.5	40.	13.
Strongyloides intestinalis	2.5	10.	3
Taenia saginata	0.87	4.	3.
Oxyuris vermicularis	....		
Echinorhyncus (?).....	....		
Unidentified parasite.			

*NOTES.

Hookworm: Many examinations were made after thymol to determine the species. In one patient, a West Indian negro, *Ancylostoma duodenale* was found, and in another both Ancylostoma and Necator. All of the other infections were *Necator Americanus.*

Trichuris. No case of illness attributable to trichuris was encountered. Anemia was never found unless malaria or uncinariasis complicated the case. Moderate and heavy infections produce marked eosinophilia, and it is incredible that an influence profound enough to greatly alter the differential leucocyte count, has no deleterious effect upon the body. In these cases, a large number of the parasites may be removed by thymol, and occasionally the ova may be made to disappear. As with infections with N. Americanus, a preliminary dose of santonin and calomel increases the efficiency of the treatment.

Ascaris. In the tropics, ascaris lumbricoides is the cause of frequent cases of intestinal disturbance, slight fevers, neurasthenia, etc., which are entirely relieved by santonin. In children, convulsions are often encountered. In very young children, ascaris is a most serious complication of malaria, predisposing to convulsions and cerebral complications. In any case of malaria in young children, with grave nervous symptoms, there should be no delay in making an examination for ascaris.

Platyhelminths. *Taenia saginata* was the only platyhelminth encountered. A portion of the worm is usually removed by thymol. This should be followed as soon as possible, usually the second day, by male fern, 2 drachms for a healthy man taken during starvation. If the scolex is not removed, the kernels of two to four ounces of pumpkin seed should be eaten daily for the next week. All cases treated in this manner—seven in number—have been permanently cured.

Oxyuris. Only a few children were examined, and the prevalence of oxyuris cannot be definitely stated. It is not as common as in civilized countries.

Echinorhynchus (?). The investigation of this and the following parasite was too imperfect to be of much value, and they are only mentioned to make the report complete.

One very intelligent patient of the better class brought a few specimens of a parasite measuring 7 to 12 mm. in length, by 3 or 4 in breadth. The caudal extremity was pointed, very slightly curved dorsally. The surface smooth, without rings, and white. The anterior extremity shows macroscopically a black dot, which consists of the partly chitinized ring of hooks which surrounds the sucker-like mouth. The chitinous portion of the hooks is continued into the substance of a proboscis-like support for the mouth and, at the base, is surrounded by a ring-like muscle. Below this is what appears to be a sucking apparatus, terminating in an esophagus. The entire proboscis is retractible, forming a sheath by the invagination of the walls. When fully protruded, no sheath is visible.

The patient stated that on three separate occasions he had passed large numbers of these parasites. No ova of unknown form were found. The patient remained ten days in the hospital; was given male fern, thymol, santonin, betanaphthol, eucalyptol and chloroform, and granatum. No more of the parasites were removed, and there have been none since.

The patient was probably telling the truth, as he was willing to pay well for his treatment. He was also infected with necator, ascaris, trichuris and strongyloides.

Unidentified Parasite. From two patients living in the same house on the coast, there were removed by male fern a tæniform segmented parasite, having a head resembling the scolex of dibothrocephalus; but with a single sucker, communicating with an alimentary canal. Ova, having an aperculum, had been seen in both patients. The specimens when recovered were too fragile for further examination. They were probably accidental parasites.

PROTOZOA.

Method of Examinations—For the last year, every case presenting any abdominal symptoms whatever has been examined for protozoal parasites,—a saline being given in all but those who already had a diarrhea. In addition, the soft specimens obtained after the preliminary purge for thymol treatment were examined for protozoa, and the proportionate findings (almost nil) were added to those already obtained, and the results estimated in terms of the total population.

The following protozoa were found:

Endamoeba coli	0.1 %
Endamoeba histolytica	5.2 %
Craigia migrans	3.1 %

Craigia hominis	0.2 %
Vahkampfia "pellucida"	2.2 %
Trichomonas intestinalis	0.1 %
Balantidium coli (variety)	0.06 %
Unidentified protozoon	0.06%
Unidentified amœbidæ	0.6 %

Endamœba coli. Over a year of most careful search for *E. coli* has made it evident that this parasite is very infrequent in Honduras. A large number of cases which at first suggested it, were, after further examination, found to be *E. histolytica.* In cases where *E. histolytica* is proven present, all forms, excepting cysts having more than four nuclei, and excepting also those having a limax type of nucleus, have been considered as *E. histolytica,* owing to the resemblance of the pre-cystic form to *E. coli.* It is probable that most of the unidentified amœbidæ were the pre-cystic form of *E. histolytica,* judging from the ratio of the recognized forms in the above table. The ordinary busy observer would undoubtedly consider pre-cystic *E. histolytica,* Vahlkampfia (in spite of the prominent ectoplasm), and Craigia, all as *E. coli.* It is evident that all reports as to the prevalence of *E. coli* in Central America must be accepted with caution, unless made by experienced observers.

Trichomonas intestinalis. This parasite is not indigenous to Honduras. All of the cases observed brought their infection from other countries. They all presented a mild diarrhea, with slight intestinal disturbance. The infection is readily removed with either methylene blue or ipecac.

Craigia, Vahlkampfia, and Balantidium are discussed in separate articles.

The Undetermined Protozoon is discussed with Vahlkampfia.

N. O. Medical and Surgical Journal

Editorial Department.

CHAS. CHASSAIGNAC, M. D. ISADORE DYER, M. D.

COLLABORATORS.

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C. JEFF MILLER, M. D., Prof. of Obstretics and Clinical Gynecology, Tulane Univ. of La.
F. W. PARHAM, M. D., Prof. of Surgery, Tulane Univ. of La.
A. W. DeROALDES, M. D., Surgeon-in-Chief, Eye, Ear, Nose and Throat Hospital, New Orleans.
E. A. ROBIN, M. D., Prof. of Diseases of the Eye, Tulane Univ. of La.
EDMOND SOUCHON, M. D., Curator Museum of Anatomy, Tulane Univ. of La.
J. A. STORCK, M. D., Prof. of Diseases of the Digestive System, Tulane Univ. of La.
ROY M. VAN WART, M. D., Prof. of Psychiatry, Tulane Univ. of La.

DRUGLESS DOCTORS AND DOPE.

An amusing contention has developed from the enforcement of the Harrison Narcotic Law, and it would be much more diverting were it not for the tragic possibilities in the background.

The osteopaths have been trying to register and some have succeeded in registering in order to be permitted to administer legally opium and other narcotics, the use of which it is the intent of the United States Government to control strictly.

Now, the only basis upon which the osteopaths have claimed exemption from compliance with the laws regulating the practice of medicine, and the only excuse available for demanding

the formation by law of an examining board of their own, is that their manner of practice is essentially different, *that they do not administer drugs,* that their methods depend upon their great knowledge of anatomy and the scientific manipulations dependent thereupon. The term "drugless practitioners" is not one of opprobrium conferred by the old-fashioned doctor, but is one including the osteopath, the chiropractic, christian scientist, etc., etc., and selected by them and their adherents rather as a badge of distinction to denominate their being something new, something "different," a quality so highly prized nowadays.

So, we have the comical view of a set of "drugless" doctors fighting to be allowed to administer the most potent drugs, those so well recognized for their possibility for evil that a beneficent and paternal central government is making a serious effort to restrict their use to the most legitimate channels and purposes.

We say "fighting" advisedly. As with all important and new laws there is some confusion and has been vacillation on the part of some of the officials whose duty it is to interpret or to enforce the Harrison law. Some osteopaths were registered, others were refused; some of the former had their registration cancelled and there has been arguing back and forth. The latest decision in this state is of September 8, 1915, by the office of the Collector of Internal Revenue, based upon a revised interpretation announced by the Acting Commissioner of Internal Revenue issued from Washington under the date of July 23. This is worded as follows: "Osteopaths, therefore, should be permitted to register, provided they are registered as physicians or practitioners under the laws of the state, etc." An interpretation of this interpretation is a legal question which we shall not argue, at any rate for the present. It may well be left to be settled by the high legal authorities of the state, to which we understand it may be presented.

We need not, either, make more than a passing comment on the fact that the subjects upon which the osteopathic board examines applicants for license as osteopaths do not include *materia medica.* We do so merely to bring out the more glaringly the inconsistency of drugless practitioners who are not taught about drugs, are not examined upon their possible knowledge of such, who boast of not using them, yet are now fighting

for the right to administer them notwithstanding their own disclaimer.

Frequently, the regular profession, through its societies, including the American Medical Association, through its journals, through legislative committees, has proclaimed that the osteopaths were only masquerading as "drugless doctors," that their pretentions were simply a cloak under the protection of which they obtained the right to treat in a certain manner, only to slip into any and all kinds of practice without complying with the higher requirements enforced by the other boards of medical examiners. They are now convicting themselves out of their own mouths when they claim the right to register under the Harrison act and to administer the drugs included in the provisions of that law.

It is to laugh. Only one more ludicrous feature could be added to this absurd situation. It would be if our christian scientist friends, who so far have been more consistent, now came forward demanding the right to administer drugs for the relief of pain which they claim is non-existent.

THE SOUTHERN MEDICAL ASSOCIATION.

This year the Southern Medical Association meets at Dallas, Texas, and already a strong movement is afoot to make the gathering notable. This Association has grown rapidly since it expanded its scope and purposes so as to embrace all of the Southern States, and a successful meeting in Dallas and in Texas will mean that all of the Gulf States are concerned in the progress of the Association.

The usual absence of all but scientific and social features makes of these meetings a delightful congress of friends and the democratic administration precludes any suggestion of the politics and differences occasionally met with in other large bodies.

There should be an excellent program and we know how hospitable Texas can be, so all of our readers who are members should get ready for the meeting, and those who are not members should fall in line or should go to the meeting for inspiration.

Remember the dates---November 8, 9, 10 and 11, 1915.

UNREST.

The psychology of the world at this moment is rather difficult to interpret. A recent news item compares the great increase in suicides in the warring countries, and especially in Germany, France, England and Italy. The item states that Germany leads and the proportion of those who cannot stand the stress of the times is nearly fourfold the number in ordinary times.

Even in this country the reflex attendant upon the influences ramifying from the centers of war has occasioned depression reaching to the desire to end it all.

The unrest is universal and its extent impossible of calculation, for the uncertainty of any economic balance for a long time to come must challenge the intelligence of the wisest men and the best of counsellors.

The enormous expenditures in money and in lives cause the mind to stagger at the outlook when it will all be over—and, even at a cost of more than a quarter of a billion dollars a week, there is no end in sight.

The adjustment of human interests must come about, but it will need genius and human intelligence higher than the ordinary to grasp even the ends of the problems which necessity will lay on another generation.

The weaker minds must run to fear and it is no wonder that some of them lose their balance trying to weigh themselves in the struggle ahead. The ferment of unrest is not, then, unnatural: it must be anticipated and discounted.

Medical News Items

ORLEANIAN WARS ON TYPHUS.—Dr. W. B. Caldwell of New Orleans, who is hospital administrator for the Red Cross at Monastire, Southern Serbia, is given credit for splendid work in aiding to check the epidemic of typhus fever in that kingdom. In a report made public by the Red Cross, Dr. Caldwell tells of the terrible conditions that prevail in Serbia. He says that as many deaths are caused by starvation as by the disease. Dr.

Caldwell also did creditable work in the sanitary campaign on the Isthmus of Panama.

COUNTY HEALTH OFFICER FINDS TOO MUCH LAXITY IN FILING REPORTS.—The laxity in filing reports with the State Board of Health office by various county health officers is causing complaint as indicated in a letter from County Health Officer Williams of Harrison County, Mississippi. In order to secure reports from the various physicians throughout the county, Dr Williams will likely prosecute physicians who violate the law by not having their reports in his office by the first of the month, the prescribed time.

CANCER IMMUNITY PROMISED.—The Rockefeller Institute has announced, through the Academy of Science at Washington, a discovery by two of its investigators whereby immunity from cancer, it is hoped, may be obtained. The investigation was conducted by Drs. James B. Murphy and John J. Morton over a period of two years, with the result that in the white lymph cells of the blood there are the necessary factors in making animals immune from cancer. The physicians declare that a decided increase of the white lymph cells gives absolute immunity. In several mice treated with a serum of lymphoid tissue the number of white lymph cells in the animals almost doubled within a few days. It was also found that two kinds of animals and humans were immune from cancer—those naturally immune and those in whom immunity was induced through the previous injection of lymph tissue.

SAYS CLOTHING INFECTS CATTLE.—At the fifty-first annual convention of the American Veterinary Medical Association, held in Oakland, Cal., last year's ravages of the foot and mouth disease were discussed. Dr. John R. Mohler, of the Federal Bureau of Animal Industry, stated that one out of every six cases of infection was brought about by virus carried upon the clothing of persons.

DR. MAUDE SLYE, University of Chicago medical research worker, who recently established the theory that cancer is inherited and not contagious as a result of ten years' experiments with mice, has been awarded the Howard Taylor Hicketts prize by the faculty of the university medical school.

DOCTORS END TERM AT CHARITY HOSPITAL.—Dr. Adolph Ja-

cobs and Dr. W. F. Scott, respectively chief house surgeon and assistant at the Charity Hospital, ended their terms during the past month. Dr. Jacobs is succeeded by Dr. B. F. Gallant, of Kankakee, Ill., formerly superintendent of the State Insane Asylum. Both Dr. Jacobs and Dr. Scott are graduates of Tulane University and will practice their profession in New Orleans.

STATE BOARD OF HEALTH NEW MEMBER.—Dr. E. M. Ellis, of Crowley, has been appointed to the Louisiana State Board of Health. Dr. Ellis was for many years health officer of Crowley.

SANATORIUM MERGER.—The Charlotte Sanatorium Company will in future operate the Charlotte Sanatorium, of Charlotte, N. C. Dr. Edward C. Register is president of the company and general manager of the sanatorium. The institution is well equipped and has an efficient staff.

RECIPROCITY EXTENDED.—Indiana has been added to the list of states with which North Dakota reciprocates in the licensing of physicians. The North Dakota State Board of Health has established relations with Arkansas, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, South Dakota, Texas, Vermont, West Virginia and Wisconsin.

THE NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA will hold its next triennial session at Columbia, S. C., October 20 and 21. Headquarters will be at the Jefferson Hotel.

THE AMERICAN SOCIAL HYGIENE ASSOCIATION will hold its annual meeting in Boston, October 8, 1915.

ANTI-TWILIGHT SLEEP CAMPAIGN.—According to report, the organization of an association to oppose the extension of the twilight sleep method is being planned by Mrs. Alice J. Olsen, of Brooklyn. It is her intention to interest wealthy women in an anti-twilight sleep campaign and raise money to circulate literature and rent a lecture hall in order to give the widest possible publicity to what she considers the facts regarding the Freiburg method.

CONFERENCE ON RACE BETTERMENT.—The Second International Conference on Race Betterment was held at San Francisco, August 4-8, and was well attended. The Conference discussed race decadence, the possibilities of race improvement, and

the agencies of race betterment. Among the prominent speakers were: Luther Burbank, Dr. David Starr Jordan, of the Leland Stanford University; Dr. Ernest B. Hoag, of the Los Angeles Juvenile Court; Edgar L. Hewett, director of the United States Bureau of Ethnology; Prof. Irving Fisher, of Yale University; Paul B. Papenæ, editor of the *American Journal of Heredity*, and others. The conference was concluded with a Morality Mask, in which two hundred students of the University of California took part. This mask was a dramatic arraignment of disease and war.

THE SIXTH ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY will be held in Philadelphia, November 10-12, 1915. The subjects to be discussed include: Eugenics; Effect of the Economic Standing of the Family on Infant Mortality; Infant Welfare Nursing in Small Cities, Towns and Rural Districts; Institutional Mortality; Midwifery Conditions and Treatment and Prevention of Respiratory Diseases. The sessions will be held under the chairmanship of the following: Dr. Wm. F. Snow, New York City; Dr. Chas. A. Fife, Philadelphia; Dr. Mary Sherwood, Baltimore; Mr. Sherman Kingsley, Chicago, and Miss Ella Phillips Crandall, New York City. Mr. Homer Folks, of New York, is president of the association, and Dr. S. McC. Hamill, of Philadelphia, president-elect for 1916.

MEDICAL EDUCATION IN CHINA.—F. C. Yen, Changsha, China, gives an interesting history of the foundation of the Yale-Hunan Medical School in Changsha. The institution is the result of the joint efforts of Yale College and the native Chinese, and seems to have made an excellent start. Yen says the opportunity for shaping the future medical situation in China is superb and delay means permanent loss. The need of uniting all medical forces in establishing union medical schools in strategic centers should be utilized. Difficulties that were expected, such as the religious question, the question of control and technical matters, appointment of teachers and the language to be used in teaching, gave very little trouble, being met with by the Chinese in a liberal way. The one-time setback on account of the political changes, and the jealousy and self-interest of a small group of Chinese claiming to represent the medical pro-

fession of the province of Hunan, was effectively met by the Chinese members of the foundation and their friends, by the organization of the Hunan Ru'-chuen Educational Association, which can act as a technical intermediator between the government and Yale. As it is, Hunan-Yale represents a thorough and wholesale co-operation in medical education in China. *Jour. A. M. A.*

Free Medical Dispensaries in Milwaukee.—Under the Mathew Keenan endowment fund of about $300,000, free medical dispensaries will be established in Milwaukee as soon as the estate of the testator's widow has been settled in the county court.

New Health Rules to Be Taught in Philadelphia Schools.—A simplified course outlining the rules of health will be substituted for physiology now being taught in schools. The object is to determine not how much the children know, but how their knowledge in building up health bodies for themselves has been applied. The school board wants the boy and girl to know not only that fresh air and sunshine are good for them, but to prove it themselves in daily life.

Bequest to Infirmary.—By the will of the late Rosa Thompson, of Charleston, S. C., a bequest has been made to the Riverside Infirmary for the erection of an annex or the enlargement and remodeling of the present building.

Award of a Medal to Surgeon-General Blue.—The trustees of the American Medicine gold medal have unanimously selected Surgeon-General Rupert Blue as the recipient of this token. It is presented each year to the American physician who is adjudged to have done the most for humanity in medicine during the preceding twelve months.

American Medical Editors' Association.—The annual meeting of this association will be held at the McAlpin Hotel, New York City, on October 18 and 19. Dr. H. Edwin Lewis, editor of *American Medicine*, is president. An interesting program has been prepared and will be followed by a banquet at the McAlpin Hotel on the evening of October 19.

Cincinnati's New $4,000,000 Hospital has been opened. The hospital is situated on a tract of sixty-five acres of land in the suburbs of Mount Auburn and comprises twenty-seven build-

ings with forty-five wards. The equipment is complete down to toys for children and tennis courts for adult convalescents. A large park surrounding the buildings insures quiet and fresh air. A special hospital commission consumed four years in gathering all the good points of the most modern hospitals in America and four more years to build them into this most modern of institutions.

Loyola University Adds New Department.—A contract of affiliation was recently signed between Loyola University and the New Orleans Post-Graduate School of Medicine. Father A. E. Otis, president, and Father John J. Sherry, secretary, signed for the former, and Dr. Homer Dupuy, president, and Dr. Joseph A. Danna, secretary for the latter. After the end of its initial year the work of the school has been recognized by Loyola and the affiliation is the result.

Nation-Wide Campaign Against Fly.—The New York Association for the Improvement of the Condition of the Poor has started a nation-wide campaign against the house-fly. Hospitals, physicians, public libraries, so-called welfare associations and for the care of infants and children will receive data covering a two-year study of the fly's part in bringing disease to infants. According to the association, it has been estimated, as a result of 18,000 observations, that almost twice as many infants become ill in homes where no screens are as in homes free from flies.

Birth Rate in Berlin Drops.—A Reuter dispatch from Rotterdam reports a 25 per cent decrease in the Berlin death rate for July over the same month in 1914. In July, 1914, the children born in the German capital numbered 3370, and in July, 1915, only 2520. The number of births for May, June and July of 1914 was 10,030, against 7523 for the same quarter this year.

Personals.—Dr. Alexis Carrel, of the Rockefeller Institute, New York, at present in the medical service of the French Government, will receive the next promotion to the rank of officer of the Legion of Honor.

Dr. and Mrs. Charles Chassaignac have returned, after spending a month's vacation on the Mississippi coast.

Among the New Orleans doctors who have returned from their vacations and resumed practice are: Dr. O. L. Pothier, Dr.

Louis Levy, Dr. Edmund Moss, Dr. George J. Taquino, Dr. F. W. Parham, Dr. J. J. Ryan, Dr. A. S. Yenni, Dr. George Tusson, Dr. J. Fred Dunn, Dr. T. R. Rudolf, Dr. J. Birney Guthrie, Dr. C. V. Unsworth, Dr. Joseph Conn, Dr. Edward S. Hatch and Dr. Sidney K. Simon.

Dr. N. Thiberge left during the month for a two weeks' visit to Dr. and Mrs. William Scheppegrell at their summer home, Orleans Park, near Hendersonville, N. C.

Dr. Joseph D. Martin has moved to Richmond, Va., where he will in future be located.

Dr. Louise Taylor Jones, of Washington, D. C., and Dr. Catherine H. Travis, of New Britain, Conn., have gone to Serbia, where they will establish a baby hospital.

Dr. George J. Taquino has been appointed assistant in the Ear, Nose and Throat Department, N. O. Polyclinic, vice Dr. J. D. Martin, resigned.

REMOVALS.—Dr. R. D. Ferguson, from Fairfield, Fla., to Reddick, Fla.

Dr. C. K. Olivier, from 2922 Louisiana Avenue to 1903 Fourth Street, New Orleans.

Dr. Roland F. Hotard, from New Orleans to Orlando, Fla.

Dr. Caroline Mims, from 1229 Maison Blanche Building, to 203 Medical Building, New Orleans.

MARRIED.—On August 17, 1915, at Yazoo City, Miss., Dr. J. F. Hunter, of Jackson, Miss., to Mrs. Adine Kennington.

On August 27, 1915, Dr. Julian Carr Hardy, of Lecompte, La., to Miss Hazel Beatrice Dodge, of Elk Rapids, Michigan.

On September 11, 1915, Dr. Oliver L. Brand, to Miss Emily Scally, both of Lafourche Crossing, La.

DIED.—On September 5, 1915, Dr. L. B. Arceneaux, of Crowley, La.

On September 1, in Touro Infirmary, New Orleans, Dr. M. A. Rush, of Bay St. Louis, Miss.

On September 7, 1915, Dr. D. P. Albers, of New Orleans.

Publications Received

W. B. SAUNDERS COMPANY. Philadelphia and London, 1915.

Exercise in Education and Medicine, by R. Tait McKenzie, B. A., M. D. Second edition.

Primary Studies for Nurses, by Charlotte A. Aikens, Third edition.

The Care of the Baby, by J. P. Crozer Griffith, M. D. Sixth edition.

PAUL B. HOEBER. New York, 1915.

Amnesia and Analgesia in Parturition (Twilight Sleep), by Alfred M. Hellman, B. A., M. D., F. A. C. S.

F. A. DAVIS COMPANY. Philadelphia, 1915.

Materia Medica and Prescription Writing, by Oscar W. Bethea, M. D., Ph. G., F. C. S.

LEA & FEBIGER. Philadelphia and London, 1915.

Principles of Human Physiology, by Ernest H. Starling, M. D., F. R. C. P., Hon. M. D., Hon. Sc. D., Second edition.

DOUBLEDAY PAGE & COMPANY. Garden City, N. Y., 1915.

To-Morrow's Topics Series, by Morris, viz: A Surgeon's Philosophy, Doctors versus Folks, Microbes and Men.

C. V. MOSBY COMPANY. St. Louis, 1915.

Fractures and Dislocations, by Miller E. Preston, A. B., M. D.

THE YEAR BOOK PUBLISHERS. Chicago, 1915.

The Practical Medicine Series, Vol. V, **Pediatrics.**

Orthopedic Surgery. Isaac A. Abt, M. D., and John Ridlon, A. M., M. D., with the collaboration of Charles A. Parker, M. D.

W. M. LEONARD. Boston, 1915.

A Synopsis of Medical Treatment, by George Cheever Shattuck, M. D.

P. BLAKISTONS SON & COMPANY.

A Manual of Surgery, by Francis T. Stewart, M. D. Fourth edition.

REBMAN COMPANY. New York, 1915.

A Text-Book of Histology, by Prof. Rudolph Krause.

Students' Text-Book of Hygiene, by W. James Wilson, M. D., D. Sc., D. P. H.

MORTUARY REPORT OF NEW ORLEANS.

Computed from the Monthly Report of the Board of Health of the City of New Orleans for August, 1915.

Cause.	White	Colored	Total
Typhoid Fever	5	2	7
Intermittent Fever (Malarial Cachexia)	2	4	6
Smallpox	....	....	....
Measles	1	....	1
Scarlet Fever	....	....	....
Whooping Cough	....	....	....
Diphtheria and Croup	5	5	10
Influenza	....	....	....
Cholera Nostras	....	....	....
Pyemia and Septicemia	1	....	1
Tuberculosis	36	47	83
Syphilis	4	1	5
Cancer	18	9	27
Rheumatism and Gout	....	....	....
Diabetes	2	4	6
Alcoholism	....	....	....
Encephalitis and Meningitis	5	3	8
Locomotor Ataxia	....	1	1
Congestion, Hemorrhage and Softening of Brain	14	8	22
Paralysis	4	2	6
Convulsions of Infancy	1	....	1
Other Diseases of Infancy	14	12	26
Tetanus	....	3	3
Other Nervous Diseases	3	1	4
Heart Diseases	41	43	84
Bronchitis	1	1	2
Pneumonia and Broncho-Pneumonia	17	17	34
Other Respiratory Diseases	2	....	2
Ulcer of Stomach	....	1	1
Other Diseases of the Stomach	4	4	8
Diarrhea, Dysentery and Enteritis	17	13	30
Hernia, Intestinal Obstruction	3	....	3
Cirrhosis of Liver	8	....	8
Other Diseases of the Liver	3	2	5
Simple Peritonitis	....	....	....
Appendicitis	6	2	8
Bright's Disease	18	14	32
Other Genito-Urinary Diseases	12	8	20
Puerperal Diseases	5	5	10
Senile Debility	3	....	3
Suicide	4	1	5
Injuries	24	18	42
All Other Causes	17	20	37
Total	300	251	551

Still-born Children—White, 23; colored, 27. Total, 50.

Population of City (estimated)—White, 272,000; colored, 101,000. Total, 373,000.

Death Rate per 1000 per Annum for Month—White, 13.23; colored, 29.82. Total, 17.72. Non-residents excluded, 15.09.

METEOROLOGIC SUMMARY (U. S. Weather Bureau).

Mean atmospheric pressure 29.95
Mean temperature ..... 83.
Total precipitation ..... 7.22 inches
Prevailing direction of wind, southwest.